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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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DETROIT RIVER POSTAL SERVICE.

The postmaster-general has issued an order establishing a marine postal service at Detroit. The service is desinged for the delivery and collection of mail matter of the vessels that pass up and down the Detroit River without touching at Detroit. The importance of this commerce becomes apparent when it is stated that more tonnage passes Detroit than any other port in the world. The new service will be continuous and will be conducted by means of a steam launch, which will be used by the postal employes of the free delivery office.

In support of the annual expenditure which it is calculated will cost about $6,000 it is suggested that if it is legal to provide means of transportation for letter carriers on land it is also legal to supply boats for transportation on water.

A simple code of signals will be devised and furnished all vessels to enable them to communicate not only with the steam launch carrying the mail on the river but also with the sub-station at the dock and thereby greatly facilitating the delivery and receipt of mail to and from vessels.

This new system it is expected, will make it possible to deliver to any passing vessel a message giving directions as to change of destination or any other important subject.

NEW LAKE TONNAGE.

The following lake built vessels were assigned official numbers by the Bureau of Navigation during the week ending May 11, 1895. Sail—Granada, 1,730 tons, Port Huron, built at West Bay City; Albian, 6 tons, Grand Haven, Mich., built at Sagatuck. Steam—Argo, 721 tons, Cleveland, built at Detroit; I. Watson, Stephenson, 639 tons, Port Huron, built at West Bay City; Petrel, 34 tons, Buffalo, built at Au Sable, Mich.

LIFE SAVING INVENTIONS.

A meeting of the board for the examination of inventions for use at U. S. life saving stations has been called in Boston at the post office building for Monday, May 27. The members of the board are Prof. Cecil R. Peabody, Boston; Capt. Chas. A. Abbey, U. S. revenue marine, New York; Capt. David A. Lyle, ordnance department, U. S. army, Philadelphia; Lieut. Byron L. Reed, U. S. revenue marine, Washington, D. C.; Supt. Benj. C. Harrow, Mass,; Supt. J. G. Kiah, Michigan; Assistant supt. H. M. Knowles, Rhode Island; Gen. Supt. Kimball, as usual will attend the sittings of the board.

NOT UP TO SPEED.

It is now reported that the armor-clad ram Katahdin has failed to reach expectations regarding speed, and as a result of the trial run given the vessel several days ago, some important changes may be necessary. It is regarded as doubtful, however, if the government will ever succeed in getting a seventeen knot speed out of the vessel according to calculations made previous to building.

The contract stated that the vessel was to show a speed of seventeen knots, with an expenditure of 4,800 horse power, but during her preliminary trial the maximum speed reached was 16.25 knots. This was secured only by the extraordinary exertion of 5,500 horse power, which is beyond the safety limit. The trouble is thought to be due to the hull design, as at high speed she buries herself and carries along hundreds of tons of water in her path.

A SUMPTUOUS YACHT.

Medieval magnificence combined with modern comfort characterizes the beautiful steam launch which has just been constructed for the use of the king and queen of Italy at Venice. Painted a snowy white, she has a large pavilion of carved mahogany. Forward are the royal arms, supported by Cupids astride of anchors, and aft is the lion of Venice, flanked by dolphins. On the side two eagles of Savoy spread their wings. The windows are framed by slender columns, which seem to support the roof, thus giving lightness to the appearance of the launch, which is a marvel of wood-carving, painting and luxurious upholstering.

A NEW REVENUE CUTTER.

The plans for the new revenue cutter which is to be built for use on the Great Lakes have been completed and the ship builders of the country will soon be invited to offer bids for her construction.

Her dimensions will be 205 feet over all, 188 feet long on the water line, 32 feet beam, and a depth of 16 feet. Her displacement at a mean draft of 10 feet 10 inches will be about 900 tons. She is expected to maintain an average speed of sixteen knots an hour when the engine is developing about 2,000 horse power. She will be constructed of the best open hearth steel throughout, the requirements for which are that it shall have a tensile strength of at least 55,000 pounds per square inch and an enlongation of not less than 25 per cent, in a length of eight inches.

"The vessel will be supplied with a complete incandescent electric light plant, capable of producing a current of 100 amperes at a pressure of 80 volts. A powerful search light of 25 amperes capacity will be located on the pilot house and will be manipulated from within by means of a hand wheel directly over the steering wheel. The armament will consist of a battery of rapid firing guns and provision will be made for carrying a torpedo outfit. The vessel will be supplied with steam stearing gear, steam capstain, and steam windlass and will be heated throughout by steam.

"The propelling machinery will consist of one vertical, inverted direct acting engine of the triple expansion type, high pressure cylinder 25 inches in diameter, intermediate 37 1-2 inches low, 56 1-2 inches by 30 inches stroke. It is estimated that the maximum indicated horse power will be about 2,000 when the engine is making about 160 revolutiong per minute. The high pressure cylinder will be fitted with a piston valve and the intermediate and low pressure cylinders each with a double ported slide valve, all to be operated by the Stephenson link motion with double bar links. The crank, intermediate and propeller shafts will be of forged mild open-hearth steel, as will also the front columns, piston and connecting rods. There will be a surface condenser, containing about 3,000 square feet of cooling surface, a pair of vertical, independent, single-acting air pumps, operated by one steam cylinder. The circulating pump will also be independent and of the centrifugal type. The main and auxilery feed pumps will be of the vertical, duplex type, and will be supplied by four single ended boilers of the Scotch type, each 11 feet 6 inches long. Each boiler will have two corrugated furnaces, the total grate surface being 185 square feet. The total heating surface will be 5,300 square feet. The propeller will be of bronze, thirteen feet pitch and four bladed. When the engine is making 160 revolutions the calculated speed will be about 20.52 knots, from which deducting the liberal allowance of 20 per cent. for slip, the actual speed of the vessel will be about 16.42 knots. The coal capacity will be such as to give the new cutter a steaming radius of 2,500 knots at full speed and 4,000 knots when steaming at the more economical speed of ten knots per hour with one boiler in use."

NEWS AROUND THE LAKES.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

Capt. William Dall has been appointed keeper at the old water works crib.

Wreckage from the Chicora continues to come ashore at St. Joseph, Mich.

The Lake Carrier's Association shipping office at this port has been removed to 164 Van Buren St.

The steamer Manola grounded in the Sault on her last trip, and is in dry dock at South Chicago.

Grain shipments from Chicago last week were: wheat, 839,000 bushels; corn, 861,518 bushels; oats, 756,927 bushels.

Capt. John Prindville chartered the steamer A. Weston and barges Jennette and Eleanor for wheat to Toledo at 1½ cents.

The steamer Thomas Davidson was damaged $2,000 by collision with the Indiana St. bridge last Saturday. The city will pay.

Capt. Martin Gunderson has been appointed assistant harbor master. He held a similar position, with great credit, under Mayor Washburn.

The steel sidewheel steamer Ivanhoe has been chartered to run in the excursion business between Sault Ste Marie and Grand Marais. She will leave here this week.

Local inspectors Charles A. Richardson and Stewart Moore have had a busy time so far this season, they having inspected 150 steamers hulls and boilers since January 1st.

J. J. Rardon & Co. chartered the steamer Henry Chisholm for corn to Buffalo at 1⅛c; the barge Adriatic for wheat to Erie at 1¼c; the steamers City of London and Gladstone for oats to Buffalo at 1c.

The new steamer Isaac Stephenson, Capt. John Nicholson, just built by F. W. Wheeler & Co. will leave Bay City this week to load lumber for this port. She will have as her consort the new barge Peshtigo.

Capt. M. L. Edwards of the schooner Cascade, has been appointed keeper at the Lake View Water Works Crib. Several years ago the schooner Cascade was a lightship at the entrance to Chicago harbor.

Marine insurance men have been hit hard this season. Their lossos up to date aggregate $520,000, as compared with $136,000 a year ago. The spring of 1893, which was attended with several disasters, cost only $320,000.

J. G. Keith & Co. chartered the steamer Majestic for wheat to Buffalo at 1¼c; the Iron Duke, Iron State and Marion for corn to Kingston at 2½c; the steamer Mary A. McGregor for railroad ties South Chicago to Duluth.

The Islander, the trim little steamer built by E. W. Heath, at Benton Harbor for George T. Arnold, of Mackinaw Island, was launched Monday. She will enter the excursion trade at Mackinaw Island this summer.

The Detroit Boat Works through their Chicago agents, F. W. Chittenden & Co. have received an order to build for the Ogden Rowing Club, Chicago, several single and double working boats, a gig, a barge and several pleasure boats.

The firm of Chas. P. Willard & Co., 197 South Canal St. have catalogued a number of steam yachts and launches for sale or charter. The list is a very inclusive one and there is as great a variety as can be found in any yacht agency.

The Inter-Ocean Transportation Co., is fitting the Minnnesota, Merrimac and Massachusetts with chutes to automatically trim the ore as it pours into the hold. The intention seems to be to dispense altogether with the services of trimmers.

Capt. Alex Anderson has been appointed bridge tender at Indiana street bridge. He was bridge tender at Erie street under Mayor Roche, and at Kinzie street under Mayors Washburn and Harrison, and was considered a very efficient man.

Life savers at Holland, Mich., have located what is believed to be the wreck of the old steamer Michigan at the mouth of Black Lake, in 150 feet of water. The spot was marked with a buoy. The Michigan was an old Ogdensburg liner, and was lost July 9, 1886.

An old subscriber would feel obliged by being informed through the columns of THE MARINE RECORD, the length from mitre to mitre of the present old Welland Canal and the name and length from stem to taffrail of the largest schooner that ever went through it.

Three acres of land in South Chicago has been transferred to the Lake Michigan Car Ferry Co., practically the Wisconsin & Michigan R. R. Co., which is building two car ferry barges at Bay City. The ferry's will carry cars 250 miles; probably the longest car transport route in the world.

The steam Joseph L. Hurd beached at Harbor Springs after collision with the Cayuga will be sold as she now lies by the underwriters. Her entire bows are stove in. The body of George Johnson, the steward of the Hurd, has not yet been recovered, happily this was the only loss of life through the collision.

Carr & Blair chartered the steamer Uganda for wheat to Buffalo at 1¼c; the steamer Frank L. Vance for oats to Buffalo at 1c; the steamer M. M. Drake and schooner James G. Blaine, for corn to Port Huron at 1c; the steamer Edw. Smith, No. 1 and consorts Maria Martin, Angus Smith and Homer, for lumber, Ashland, Lake Superior to Chicago at $1.75 per M feet.

The Lincoln Park Commissioners have referred to president Crawford, with full power to act, the matter of constructing a pier suitable for erecting a permanent yacht harbor. It is estimated that the construction of a pier, which it is proposed to extend eastward from the present north and south breakwater at Fullerton avenue to a distance of 200 feet, will cost $12 per foot.

At Miller Bros.' shipyard, the steamer City of Kalamazoo was in dock for a new Sherif's wheel; the steamer Ivanhoe is receiving four new state rooms; considerable repairs were done on the steamer Thomas Davidson comprising new stanchions, stringers and carlings abreast the boiler house, new stringers across in front of the boiler house and repairs to the hurricane deck on the side of the cabin aft.

The Marine Iron Works, Clybourn and Southport Avenues, Chicago, are having a very satisfactory season, building small and medium size marine machinery, as well as the complete boats. They build to order only and make up the entire job from keel to smoke stack and not sub-letting any portion of it. They shipped a handsome, speedy steam yacht, 67 feet long by 11 feet beam, to Delevan, Wis., a few days since; have one nearly finished for Southern waters, also a small light draft but powerful towing launch for Indianapolis, Ind., as well as numerous complete outfits of machinery for boat builders and others who are supplying their own hulls.

George Warrington, 86 North Clinton street, is building the following boilers: A No. 20 boiler 6 by 8 feet for steam yacht Laura S, to carry 250 pounds of steam. A No. 7 boiler 4 by 4 feet for use in the mines near Chihuahua, Mexico. A No. 12 boiler for H. A. Beidler, Lake Geneva, Wis., for use in his launch Cygnet. A No. 20 boiler for new steam yacht building for Thos. Sully, commodore of Southern Yacht Club, New Orleans, La. Two No. 35 boilers for new steam yacht Alcyone now building for Mr. H. F. Balch, of Minneapolis. Each boiler is 8 feet wide, 9 feet long and 10 feet high and develops 400 horse-power under forced draft. Aggregate horse-power, 1 250.

DETROIT, MICH.

Special Correspondence to The Marine Record.

The barge Melvina is on Oades marine railway for a thorough overhauling.

The schooner Kate Buttironi has been getting bottom repairs at Clark's dry-dock.

Postmaster Enright is asking for proposals from owners of steam launches. He is anxious to inaugurate his river service by June 1.

There is only 8 feet of water over the bar at the mouth of the Thames River, but the Dominion government will dredge it to at least nine feet.

Capt. George McCullough is having his recent purchase, the Maud Preston, overhauled at Clark's and put in readiness for the summer trade.

On her last round trip the steamer Mahoning ran 225 miles on Lakes Huron and Erie in 14 hours 45 minutes and 400 miles from the Sault to Duluth in 26 hours.

The anchor of the schooner Albany got foul of the gas main across the river a day or two ago. The gas company bought the anchor and 15 fathoms of chain, which were then slipped.

The steamers Pilgrim and The Sailor Boy received new wheels this week at Oades' shipyard, and the Darius Cole has had her bottom scraped and painted in the Clark dock since my last letter.

The Canadian Pacific steamers will leave Windsor every Saturday at 3 p. m. for Fort William, returning at noon the following Friday. Stops of several hours will be made at Mackinaw Island and the Sault, and the steamers will stay a day at Fort William.

Gen. O. M. Poe has the sympathy of all his friends in his bereavement by death of his son, Charles Carroll Poe, at New York, after a very short illness. Mr. Poe was born in Masillon, O., thirty-one years ago. He was married only eight weeks since to Mrs. S. C. Starke, daughter of Jabez Cook, of Fowlerville, Mich.

L. Black & Co., opticians, 145 Woodward Ave. have an attractive display of marine pictures in their windows. There are many features worthy of note including a description of the building and equipment of the twin screw steel passenger steamer North Land. THE MARINE RECORD photogravure and half tone supplements are also on view.

The firm of Eddy Bros. of Saginaw, Mich. will on the completion of their second new steel steamer building at the yards of F. W. Wheeler & Co., W. Bay City, be the owners of a fleet of four of the largest carriers on the lakes. The fine wooden steamer Charles A. Eddy built at the yards of the Detroit Dry Dock Co., has been taken over in part payment for the last contract placed at the Wheeler yard by Eddy Bros.

CLEVELAND, O.

Special Correspondence to The Marine Record.

The Maritana received temporary repairs at Detroit this week.

The steamer North Land will make her trial trip on Saturday.

The steamer Yattow has been placed on the Cleveland Lorain route this week.

There is some consolation for the owners of large tonnage in the steady rise of water at St. Mary's Falls canal. It is likely that better than fourteen feet will be found there in a few days.

It is estimated that the coal-loading appliance now being constructed on the Nypano dock, which will be ready for use about July 1, will save ten cents per ton in loading coal on vessels.

Captain James Lingham of River Street died on Wednesday after a long, wasting illness. Captain Lingham sailed for twenty-six years and, years ago, was master of the schooner Butcher Boy.

The new passenger steamer Arrow, of Sandusky, Capt. George A. Brown, arrived here on Sunday with an excursion of about three hundred persons. The Arrow attracted great attention and was much admired.

Work on the steel steamer building for R. R. Rhodes et al. at the yards of the Cleveland Ship Building Company is being well advanced. The side plating is now going on and all skilled labor that can work to advantage is employed.

One of the best built and staunchest steel steamers ever turned out from this port is the Chili, which will leave here for Buffalo on Saturday. Mr. Robert Wallace, president of the Cleveland Ship Building Co., her builders, will embark on the steamer and watch her work on the maiden trip down Lake Erie.

The U. S. S. Michigan commenced this week to make a thorough survey of the harbor; and on the completion of the work the Hydrographic Office, Navy Department, will issue a chart giving bearings and the soundings as they are at this time. It is evident that the Navy Department is taking more interest in the lakes than formerly, and the work is always reliable.

The Corona and the German, of the Mutual and Menominee Lines, received rather expensive bottom damages this week in the Poverty Passage during thick weather. They will be dry-docked, surveyed and repaired as quick as possible, though some detention will ensue on account of the dry-docks being very busy just at this time.

The directors of the Cleveland Yacht Club have decided to proceed at once in the construction of their new club house on the lake shore near the foot of Erie street. George S. Worthington, G. W. Luetkemeyer and E. W. Radder is the building committee, and in the hands of such energetic men adequate club quarters are assured for the latter portion of the season.

The regatta of the Cleveland Yacht Club is now fixed for July 4. The course will be off the lake front, three and one-half miles to windward and return, the distance to be sailed over twice. There will be races for three classes of yachts, and flags will be offered for each class. The classes will be such that nearly all of the Cleveland yachts will be able to enter.

About 500 tons each trip is too much for a steamer to lose in these times through a lack of river dredging, yet, the boats discharging at the Cleveland Rolling Mill load to about ballast trim because the Cuyahoga River will only permit a fourteen foot draught. This neglectful state of affairs must be blamed entirely on the municipal administration of the general government having jurisdiction only to the harbor line.

The large steamers North West and North Land will on making this port during the season be waited upon by a tender instead of coming into the river. This is a featnre of mail and passenger service on the coast and will well repay the Northern Steamship Co. both in time and cost although it is a slice off the earnings of the towing companies. The small steamer Post Boy will act as tender.

A state naval reserve corps is one of the promised institutions for this port, and as the Chamber of Commerce has taken the matter up, it is likely to go through the legislature on this second attempt. The former bill was ridiculed out of existence, it being contended that the measure was only a play drill for amateur yachtsmen and clerks. There is now a better general knowledge of the subject, and Ohio is likely to fall in line with Illinois and Michigan legislation in this respect.

PORT HURON, MICH.

Special Correspondence to The Marine Record.

Harbormaster Stoddard is enforcing the anti-whistling ordinance in Black River.

The Canadian government has a dredge at work on the middle ground at Point Edward.

The Thompson warehouse is being overhauled and repainted and the dock thoroughly repaired.

The schooner Aurora, bound down from Goderich to Sarnia light, ran into the Grand Trunk dock at Fort Gratiot Monday morning. She had to spend a day or two in Dunford & Alverson's dry-dock.

The steamer Linden which went ashore at Point aux Barques on her first trip down with copper, was brought in last Friday. She is in worse condition than had been thought. She is now in dry-dock receiving repairs.

The schooner L. L. Lamb ran upon the fluke of her anchor Monday morning and cut such a hole in her bottom that tugs had to hurry to get her into dry-dock before she would sink. Her master was trying to keep her from getting aground.

SAULT STE. MARIE, MICH.

Special Correspondence to The Marine Record.

The three new docks of the Chandler-Dunbar Co. will be 400 feet deep, with a frontage of 110 feet each, and slips between.

Captains of the Northern Steamship Line have been ordered to use the old channel until the Hay Lake cut is properly buoyed.

The charges of neglect of duty made against local inspector Gooding, of Marquette, have been dismissed after investigation.

Capt. D. W. Johnson, of the schooner Ben Harrison, missed his footing and fell into the lock Sunday. He was pulled out without much difficulty.

Commander W. W. Mead, light-house inspector for the Eleventh district, suggests that the vessels employ local pilots when navigating Hay Lake channel until they become accustomed to its currents, etc.

May 13 was the record day at the canal, when 88 boats aggregating a registered tonnage of 91,357 were locked through. The heaviest tonnage prior to that date was on June 18, 1894, when 86,703 tons passed through.

Dunbar & Sullivan fully expect to recover, with interest, the duty of $3,600 which they had to pay in 1890 on the dredge Tipperary Boy. The dredge was built in the United States and then exported. It was offered for free entry on the above facts, but as the dredge had received large repairs at Amherstburg in the interim, duty was assessed. They brought suit to recover the amount, which was heard last week by the United States Court at Cincinnati, O.

TOLEDO, O.

Special Correspondence to The Marine Record.

Thirty ship carpenters have been added to the force in Craig's shipyard.

A stowaway in the hold of the steamer S. C. Reynolds came near suffocating while she was bound up Lake Erie from Buffalo last Saturday.

The dredges Birckhead and Champion are at work on the straight channel in Maumee Bay. They will remove 320,000 yards of material this season.

The schooner S. H. Dunn, bound for this port from Kingston to load grain, lost her centerboard off Kelley's Island Saturday evening. The tug Andrews went down and towed her in.

The body of young Brown who was drowned when the Sadie Shepard foundered, was recovered on the beach at the mouth of Ward's canal Saturday. The boy's father, who works at Craig's shipyard, was at once notified and cared for the remains, which were taken to St. Clair for burial.

SANDUSKY, O.

Special Correspondence to The Marine Record.

The Frank E. Kirby's daily trips between Sandusky and Detroit will begin on June 5.

The dredge which was at work in front of the short line dock last week is now engaged on the harbor front channel.

The tug L. P. Smith came up from Cleveland to get the B. B. Icsman, which was sold early this spring. She will be cut down and used as a fuel boat.

The steamer Swansea, has been in port a good part of last week. Assistant U. S. engineer, W. T. Blunt, is sounding and laying out the dredging work.

On account of the low level of the lake, considerable dredging will be done all along the docks this season. The water is nearly one foot lower than a year ago, but as yet vessels have had no trouble getting in or out. The Big Four will probably expend several thousand dollars on dock improvements and dredging, and the work will likely begin soon.

BAY CITY, MICH.

Special Correspondence to The Marine Record.

The new steel steam yacht Wapiti, built by Wheeler & Co. for Isaac Bearinger, the wealthy lumber man, was launched Tuesday. She is one of the finest yachts on the lakes and is being finished in some of the most expensive imported woods. She measures 107 feet on the keel and has very fine lines, speed entering largely into the design. The old wooden yacht of the same name has been condemned.

Capt. James Davidson is increasing his force of workmen almost every day, and at present there are about 700 men at work in the yard. The wooden schooners are being rushed towards completion, and as the transfer barges have to be finished in a short time, extra work is being done on them, and it will not be long before they are ready for launching. Capt. Davidson will put the new schooners on the line with the other boats of his fleet as soon as they are ready, and will run them with ore and grain between Lake Superior and Chicago. Work on the new big steel steamer at the Wheeler yards, as well as the two steel lumber carriers, is going forward as fast as receipts of material will warrant. The lumber boats are expected to carry 2,000,000 feet each.

F. W. Wheeler & Co. have sold the schooner Alert to Isaac Stephenson for $1,750.

BUFFALO, N. Y.

To the Editor of The Marine Record:

The tug Fabian, of Maytham's line, now holds the record for speed in the harbor.

The schooner Mingoe apparently wet her grain through her decks as no leak could be found in her topsides.

Hand and Johnson's new tug which replaces the Cascade, sold to Lorain parties, has also been named the Cascade.

During last week vessels took out 60,475 tons of hard coal, 17,341 barrels of cement, 16,737 barrels of salt, and 49,982 barrels of sugar.

James Wilson, of Fayworth, Mich., deckhand on the steamer Syracuse, fell into the hold Saturday night, and was killed. He leaves a widowed mother.

Capt. A. B. Drake, formerly of the Thomas Maytham, will command the new Kelderhouse steamer Chili. Capt. Joseph Hulligan, of the Brazil, will take the Maytham, being succeeded by James Conners, mate of the Brazil.

There has been a great deal of competition this season between Buffalo and Tonawanda tugs, and now Captain Dunn, manager of the Vessel Owners' Line at the lumber port, threatens to come to Buffalo and start in business with three tugs, one of which is the Enterprise.

The season on the Erie Canal is so dull as to remind the boatmen of Commodore Vanderbilt's threat that he would make grass grow in its bed. Many of the boats are still out of commission, and 1⅞c is the rate on wheat. An attempt was made with dynamite, Saturday night, to blow a break in the canal near Rome, N. Y.

The steamer North West has been provided with a new system of ventilation, the heated and pure air being forced into every section of the ship. She has been fueled with hard and soft coal,and will test the qualities of each. Soft coal will be burned in a part of the boilers, and hard coal in the others. The ashes will be weighed and the steaming qualities of each carefully noted.

John Vallier, second engineer of the steamer M. C. Neff, was very seriously scalded by escaping steam at Menominee a few days ago, while she was blowing off her boilers. He is in the Marietta Hospital.

also being built by the firm. The tug Genevieve is also being rebuilt at this yard, and some dump scows for the Buffalo Dredging Co. are being constructed.

The fuel question is assuming a new phase. The vessel men are buying nut coal and slack, and are using forced draft. There is fifty cents per ton saved in the cost of fuel, and it is claimed that by using blowers no more will be used than of lump. Steamers will thus save $100 a trip and then blowers cost only $150 each. The W. P. Ketchum fueled slack on her last trip

When the Northern King was passing through the Michigan Street Bridge Sunday, the bridge swing around, the upper end striking the King's port bow, smashing her rail and several stanchions. The bridge was carried off its tracks, and fell diagonally across the track badly obstructing navigation. The trouble is said to have been caused by the wind. The Northern King was damaged to the extent of $500, and the bridge agreat deal more.

The water in Niagara River is very low. Major Ruffner, U. S. Engineer says there is fourteen feet of water, but tug men with one accord dispute this. The steamer W. H. Sawyer went down a couple of days ago drawing 12 feet, 10 inches with the wind blowing down the lake. Capt. Jenks said he struck in three different places. T. S. Fassett, a Tonawanda lumberman takes the side of Major Ruffner and says there is plenty of water if boats will only find the channels. Capt. Ed. Maytham says a boat cannot go down on the range, drawing 12 feet and wants to know why the ranges are not set to point out where the great abundance of water is.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

The schooner C. P. Minch brought down a cargo of stone from Superior this week.

The steamer Neosho has brought a cargo of grain from Duluth for the Kern mills.

The Kirby-Carpenter will protect its steamer landing at Menominee with a breakwater.

The City of Kalamazoo will receive a new wheel 9½ feet in diameter, and the Charles McVea a wheel of 7 feet 4 inches, both of the Sheriff's pattern.

The fare on steamers between this port and Muskegon has been cut from $3 to $2.

J. C. McClintock, agent of the Western line, has recovered from his late accident.

The schooner Bay State will be recalked and get minor repairs at Manitowoc.

The little Sturgeon Bay steamer Liberty is to be placed on a Lake Superior route.

Capt. P. S. Roulette, is now in command of the Hart line steamer C. W. Moore.

ASHTABULA, O.

Special Correspondence to The Marine Record.

The fog signal will stop May 25-28 for repairs.

The Griffin came here a few days ago leaking. She had just been in dry-dock at Cleveland.

The new steel schooner Marcia made her first appearance at this port Sunday. She brought 2,831 tons of ore from Two Harbors.

The Youghiogheny and Ellsworth Coal Companies have decided not to purchase a car dumping machine for loading cars this season.

Work on erecting the most modern machinery on the P., Y. & A. docks has begun. The three McMyler machines have been moved to the Haskell dock below the swing bridge.

UNITED STATES AND CANADIAN CANALS.

In the May issue of "Notices to Mariners" for the Great Lakes, the Hydrographic Office, Bureau of Navigation, Navy Department publishes the following tables of canals tributary to lake waters:

CANALS OF THE UNITED STATES IN THE TRIBUTARY WATERS OF THE GREAT LAKES.

No.	Name of Canal.	Waters Connected.	Terminal Points.	Lengths of Canals.	Heights of bridges.	Locks. No.	Length.	Width	Depth	Lock'ge
				Miles.	*Feet.*		*Feet.*	*Feet.*	*Feet.*	*Feet.*
1	Champlain	Hudson River and Lake Champlain.	West Troy—Whitehall	66	11	.....	110	18	5	150
2	Oswego	Lake Ontario and Erie Canal	Oswego—Syracuse	38	12	29	110	18	7	155
3	Erie	Lake Erie and Hudson River	Buffalo—Albany	352 18	12	72	110	18	7	572
4	Ohio	Lake Erie and Ohio River	Cleveland—Portsmouth	309	10	144	90	14	4	886
5	Miami and Erie	Lake Erie and Ohio River	Toledo—Gincinnati	250	10	97	90	14	4	796
6	*Illinois and Michigan	Lake Michigan and Mississippi River.	Chicago—LaSalle	96	11	18	110	18	5.5	
7	†Illinois and Mississippi River (Hennepin)	Illinois River and Mississippi River.	Rock Island—Hennepin	77	15	39	170	35	7	302
8	†aSanitary and Ship Canal of Chicago	Lake Michigan and Desplaines River.	Lake Michigan—Lockport	34 05	22	0	.....	.....	.....	
9	Sturgeon Bay and Lake Michigan	Green Bay and Lake Michigan.	Sturgeon Bay, Wisconsin	1 25	.....	.....	.....	.....	.....	
10	bSault Ste. Marie (St Mary's River)	St. Mary's River	Sault Ste. Marie	2	Draw. †Draw.	1 Old †1 New	515 †800	60 †100	16 †21.5	18 18
11	Portage Lake Ship Canal	Lake Superior and Keweenaw Bay.	Houghton, Mich.—Portage.	2	.....	.....	.....	.....	.....	

*Locks will pass vessels of 17 feet beam, 103 feet length and 4' 8" draft.
†Under construction.
a Least depth 22 feet, narrowest channel 101 feet to be widened hereafter.
b Only 14 6 feet can be carried in canal.

A ship channel connecting the waters of the Great Lakes between Chicago, Duluth and Buffalo, giving channel 300 feet wide, 20 to 21 feet depth, will be completed by Nov. 30, 1895.

A canal at Portage, Wisconsin, connecting Fox River with Wisconsin River. This canal is two miles in length with a depth of 3 feet. The following is a route from Green Bay to the Mississippi: Green Bay through Fox River; a series of waterways called Eagle Rivers; the canal at Portage; the Wisconsin River to the Mississippi.

A canal and series of connecting waterways from Duluth, Minnesota, to the Mississippi River are proposed.

Portage Lake and Lake Superior Canals, Michigan. Total length 24 miles. One low drawbridge at Hancock, open space 68 feet. The channel has a depth of 16 feet and bottom width of 70 feet, except about 800 feet of channel in Portage River, which is 15 feet 8 inches deep.

No tolls are charged for the passage of any of the above-named canals, excepting Ohio, Miami and Erie, and Illinois and Michigan.

CANALS OF CANADA IN THE TRIBUTARY WATERS OF THE GREAT LAKES.

No.	Name of Canal.	Waters Connected.	Terminal Points.	Lengths of Canals.	Locks. Number.	Length.	Width.	Depth	Lockage.
				Statute Miles.		*Feet.*	*Feet.*	*Feet.*	*Feet.*
1	aLachine	St. Lawrence River	Montreal—Lachine	8.25	5	270	45	14	45
2	†Soulanges	" "	Cascades Pt.—McDonald Pt	14	5	270	45	14	82 5
3	Beauharnois	" "	Melochville—Valleyfield	11.25	9	200	45	9	82 5
4	Cornwall	" "	Cornwall—Dickinson L'ding	11.5	6	200	45	9	48
5	Farran's Point	" "	Farran's Pt.—Pt. Avoyon	75	1	200	45	9	4
6	Rapide Plat	" "	Rapide Plat—Flagg's Bay	4	2	200	45	9	11.5
7	Galops	" "	Iroquois—Galops Rapid	7.625	3	200	45	9	15.5
8	St. Ours Lock	Richelieu River	St. Ours	.125	1	200	45	7	5
9	Chambly	" "	Chambly Basin—St. Johns	12	9	118	22.5	7	74
10	St. Anne's Lock	Ottawa River	St. Annes	.125	1	200	45	9	3
11	Carillon	" "	Carillon	.75	2	200	45	9	16
12	Grenville	" "	Grenville	5.75	5	200	45	9	43.75
13	bRideau	Ottawa River and Lake Ontario (via Rideau River and Lakes).	Ottawa—Kingston	Navigable water 126 75	35 up 14 d'n	134	33	5	292.25 rise 165,50 fall
	(Perth Branch of Rideau)	Lake Rideau	Beveridge's Bay—Perth	6	2	134	32	5.6	26
14	aMurray	Lake Ontario and Bay of Quinte.	Presque Isle Harbor—Bay of Quinte.	5 16	0	.....	.....	.....	
15	Welland	Lake Ontario and Lake Erie	Port Dalhousie—P. Colborne	26 75	25	270	45	*14	326.75
16	Sault Ste. Marie	St. Mary's River	Sault Ste. Marie	3.4 including approaches.	1	900	60	21	18

*Subject to fluctuation in the Summit Level, by reason of high winds on Lake Erie.
†Under construction.
a Only 12 feet can be carried between locks.
b Only 4½ feet can be carried between locks.

Nos. 1 to 7 are collectively known as the "St. Lawrence River System."

Nos. 8 and 9 as the "Richelieu and Lake Champlain System."

Nos. 10, 11, 12 and 13, as the "Montreal, Ottawa and Kingston Route."

Nos. 5, 6 and 7 are also known as the Williamsburg Canals.

The smallest dimensions are given for locks. Tolls 2¼ cents for registered ton.

All Canadian Canals are closed on Sunday, from 6 a. m. to 9 p. m.

It will be noted that the St. Lawrence system of canals are 200 by 45 with a depth of 9 feet, and that vessels 180 feet in length have passed through from the upper lakes to the coast. The river St. Lawrence with the system of canals established on its course above Montreal and the Lakes Ontario, Erie, St. Clair, Huron and Superior, with connecting canals, affords a course of water communication, extending from the Straits of Belle Isle to Port Arthur, on the north shore of Lake Superior, a distance of 2,160 statute miles. The distance to Duluth at the head of lake navigation being 2,384 miles. The difference in level between the point on the St. Lawrence near to Three Rivers, where tidal influence ceases, and Lake Superior is about 600 feet. The height directly overcome by Dominion canals between Montreal and Lake Erie is 533¼ feet. The general enlargement project for the St. Lawrence River system comprises locks having dimensions of 270 by 45 feet with 14 feet of water over the sills for the entire navigation.

TUNS—TONNAGE.

The system of tonnage admeasurement, which now shows almost nothing in relation to the carrying capacity of a vessel, dates back to the time of Edward III, of England. There was a brisk wine trade with the north of France about the close of his reign, and a vessel was described as carrying so many "tuns" or huge casks of wine. It is from this that the word tonnage is derived, and this goes far to explain the basis of admeasurement, which allows 100 cubic feet of space of practical use for stowing cargo for each registered ton, deducting the cabins, crews' quarters and machine space to fix the net tonnage. Thus it will readily be seen that the terms "net tons" and "gross tons" when applied to a vessel's admeasurement, are entirely improper, and tend to lead to much confusion, particularly upon the lakes, when both phrases are so often applied to cargo in a strictly proper sense. The measurement should be referred to as say "2,160 tons gross," or "1,908 tons net."

RECOGNIZED THEM AT ONCE.

We were all telling mosquito stories at a New Jersey summer resort, when one particularly audacious man said: "Oh, that's nothing, I was off the coast at Barnegat last summer on a fishing trip, and while we were out on deck early in the evening, smoking and chatting, a great cloud of mosquitoes, all of them monstrous birds, came out from shore and settled on the boat; and do you know, in fifteen minutes they had stripped it of every inch of canvas, and left the masts bare as bean-poles!"

We held up our hands in deprecation at this tale, when another of the party exclaimed: "Well, don't be astonished. I can vouch for that. It was only a week after that I was on a trip along the coast, and the same swarm of mosquitoes came out after us."

The first speaker didn't seem to appreciate this unexpected support, for he muttered: "Humph! They did, eh? Well, how did you know they were the same mosquitoes, eh?"

"How did I know?" repeated the other, with a chuckle. "How did I know? Why, they all had on canvas overalls."—*From the "Editor's Drawer," in Harper's Magazine for December.*

AUDIBILITY OF SOUND IN FOGS.

Major R. Livermore, Corps of Engineers, U. S. A., has made a report upon fog signal experiments and the influence of atmospheric conditions on sound from which we take the following extracts:

The sound reaches the ear through the air, and the chief causes of irregularity are found in the varying velocity and temperature of its currents, causing the sound wave to be reflected or refracted. It has been stated repeatedly, and confirmed by sufficient observations, that fog, rain, snow, etc., do not of themselves obstruct the passage of sound. They may tend to increase or diminish its intensity, according as they affect the temperature or velocity of the air.

Sound is generally transmitted better in cold than in warm air, because it is more homogeneous; for the same reason it is generally transmitted better through a fog, because when the air is near the point of saturation a slight change in temperature might cause so much evaporation or condensation as to reduce its range by one-half. Snow falling through the air acts in a similar way to check the minute currents and eddies.

Sound travels only about one hundred times as fast as a lively wind, and the wave length is as great as the width of the aperture of the trumpet; accordingly it is not at all thrown out in the direction of the axis, as the rays of light from a lens or reflector, but spreads out on every side by diffraction. Sound travels a little more rapidiy in hot than in cold air; in wet than in dry air; a little more rapidly with the wind than against it.

The audibility of a fog signal depends not only upon the instrument that generates the sound and the influences that affect the transmission to the region where it is observed, but also upon the position of the observer and the disturbing influences that affect his hearing. Too little attention is generally paid to these circumstances. Our observers once noted that a signal was repeatedly heard much farther in running away from it than in approaching it. An analysis of the observations showed that in the former case the vessel was running with a strong wind and in the latter case against it. It has often been observed that a fog signal can be heard better at the masthead than on the deck of a vessel. This may be due to several causes; where the sound ray is so tilted up as to make the signal inaudible on deck at less than 1,000 yards distance it has been noted that the audibility perceptibly increased in going aloft. On the other hand, at a distance of several miles, the effect of a few feet in elevation is comparatively insignificant; whereas the observer at the masthead is farther removed from the splashing of the waves or the sound of the engine.

Mariners differ so widely in capacity that rules which would be very useful to one might be misleading to another. No definite instructions can be prepared that will insure against accidents. Even the best of seamen are often harassed by cares and duties that divert their attention for the moment, and in case of disaster the most conflicting accounts have been given of the aberrations of the audibility of fog signals. Seamen should study the principles that affect the audibility of fog signals, just as they study the art of navigation, and should notice the wind and temperature whenever they hear fog signals. They should only depend upon hearing them at short range, unless the wind and weather favor the sound, but if they do hear them at a long range they should make what use they can of them.

They should remember that it does not require a very heavy wind to drive back the sound; that a southerly wind generally drives back the sound more than a northerly or an easterly one; that about the time of a change in the wind the sound is not generally heard as far as usual; that when the upper and lower currents of air run in different directions, or when the upper sails fill and the lower sails flap, or conversely, and the signal is not to be depended upon; that a very heavy wind tends to break up all sound; that if a vessel is traveling with the wind the signal will probably be heard better than if it were traveling against it; that behind a hill or an island the signal may be heard better at a distance than nearer to the obstacle; they should bear in mind that it is hard to locate a feeble sound, and even a strong one may appear to come from the wrong direction if it is obstructed by objects near it, even by objects not directly in the straight line between the observer and the signal; that neighboring cliffs and sails sometimes reflect the sound; that the sound may be cut off entirely by passing vessels; that to estimate the direction of the sound the head should be turned rapidly from side to side, so that the sound may reach the ears alternately.

IRON ORE PRODUCTION FOR 1894.

Mr. John Birkinbine, the iron ore expert of Philadelphia has prepared for the division of mineral resources of the United States geological survey an exhaustive report of the iron ore resources of the world in which the production of the world of ore or iron in 1893 is estimated at about 52,500,000 long tons. The portion of this report relating to the United States shows that the total production of iron ore in this country in 1894 was 11,879,679 long tons of 2,240 pounds, as compared with 11,587,629 long tons in 1893. This is an increase of about 2½ per cent. This production is only 73 per cent of the maximum production of the United States, namely, 16,296,666 long tons, which was the output in 1892, but is slightly greater than that of 1893, the proportion in that year being 71 per cent of 1892, showing a remarkble falling off. This falling off is further shown by the statement that the average production for the years from 1889 to 1892, inclusive, was 15,360,482 long tons, while for the last two years it has been but 11,733,654 long tons, a difference of 3,626,828 tons. Of the classes of iron ore mined, the red hematite continues to be the leading variety, being about 79 per cent of the total product, brown hematite, magnetic and carbonate following in the order named, the last being only about three-fourths of 1 per cent of the total product. The number of bast furnaces in operation also shows an increase over 1893. The number in blast at the close of 1893 was 137; at the close of 1894, 185.

Twenty-four states produced iron ore in 1894, ranging in amount from 4,419,074 tons in Michigan to 7,915 tons from Maryland. Most of the increase noted above was in the Lake Superior region, Minnesota showing the greatest increase, from 1,499,927 tons in 1883 to 2,968,463 tons in 1894, ranking second among the iron-producing states, while in 1893 she was third. Michigan continues to be the largest producer, holding this rank for six years. Alabama has fallen from second place in 1893 to third in 1894; Virginia has also improved her standing, rising from fifth in 1893 to fourth in 1894, while Pennsylvania has fallen from fourth in 1893 to fifth in 1894.

In spite of the increase in production noted, the total value of the product was but $13,577,325, or $1.14 a ton, as compared with $19,265,973, or $1.66 a ton in 1893. Michigan leads the country in the value of her iron ores: in 1894 they were worth $5,844,955, while Texas foots the list, with a value of $11,721. The value of Maryland's output in 1894 was $17,809.

NEW INSURANCE RATES ON GRAIN.

The new insurance rates framed at Chicago by the cargo underwriters discriminates on grain went into effect on Monday, about ⅛ cent a bushel on A2 vessels carrying grain to Buffalo compared with A1. Boats trading to Lake Ontario, many of which are of the A2 class, will be the most seriously affected. While it is possible for A2 vessels to continue in service even with this differential against them during the spring and summer they will be practically driven out of the grain trade after Sept. 1, when the rates will be materially increased, while remaining the same throughout the season on the A1. By the new tariff vessels are divided into two classes. Class 1 includes all line steamers and A1 and A1½ steam, tow or sail vessels. Class 2 includes all A2 vessels.

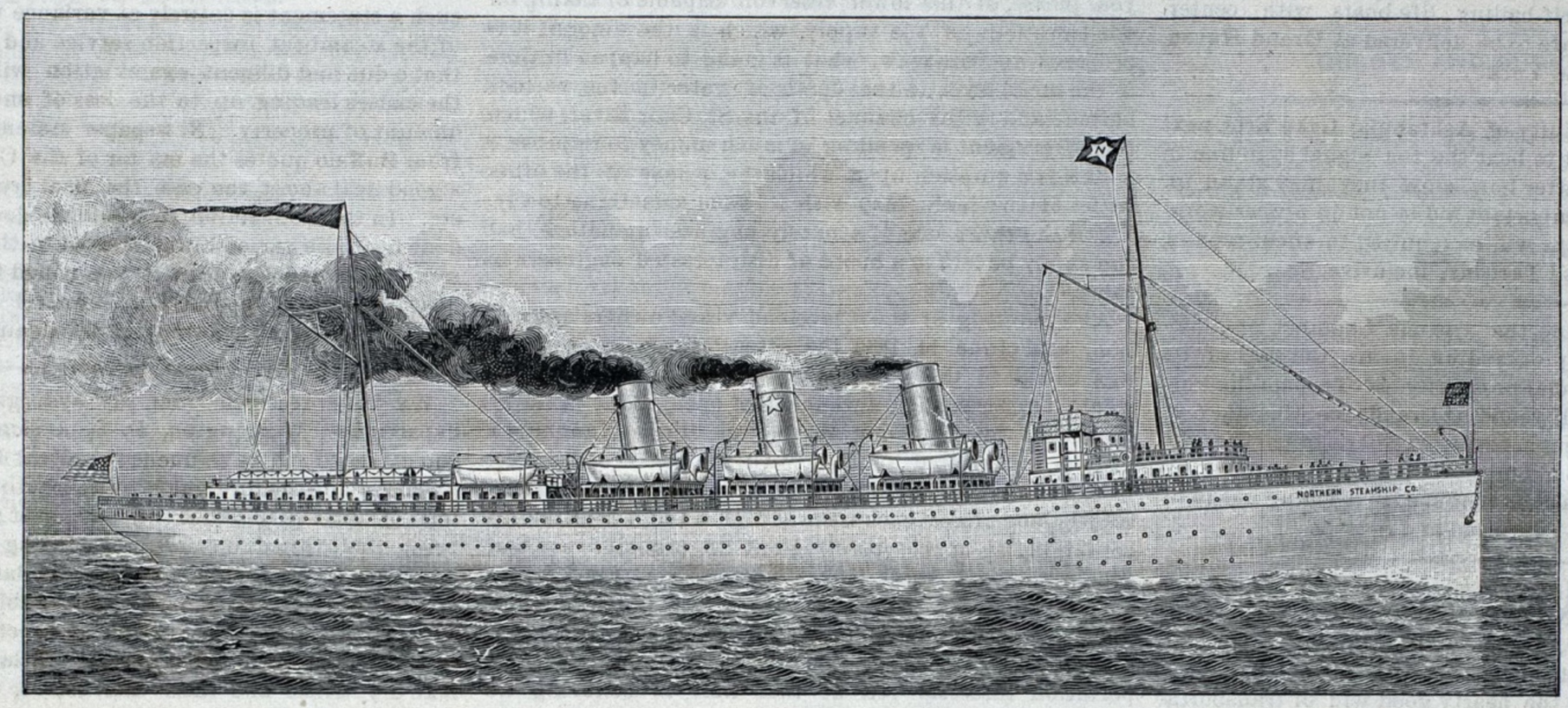
On class 1 the average is waived, while on class 2, 10 per cent. extra is charged for waiving the average. The new rates are: To Lake Erie, class 1, 25 cents; class 2, 40 cents. To Port Huron class 1, 20 cents; class 2, 40 cents. To Lake Ontario and Ogdensburg, class 1, 35 cents, class 2, 50 cents. To Montreal, class 1, 45 cents, class 2, 65 cents. One result of this grading of tonnage will be to make owners more zealous in keeping their boats up to class and perhaps less attention has been paid to this feature of lake tonnage than the trade warranted.

TRIAL TRIP OF THE NORTH LAND.

The handsome twin screw steel steamer North Land, sister ship to the North West, has just been completed at the yards of the Globe Iron Works Co., Cleveland, and will be given a trial trip on Saturday, at which time it is expected that the North West will also be at that port.

The general dimensions of the North Land are 386 feet overall, 360 feet keel 44 feet beam and 34 feet depth. The diameter of the cylinders of the two sets of quadruple expansion engines are 25, 36, 51½ and 74 inches by 42 inches stroke. She is fitted with a double battery of 14 Belleville water tube boilers, making 28 in all; 7,000 h. p. and speed 20 miles an hour.

These two large steamers form the lake passenger line of the Great Northern R. R. Co., between Buffalo and Duluth, the transcontinental route is then by the Northern R. R. to the Pacific coast and it has passed beyond a well-founded report that a Pacific line of steamers will soon be operated by the Great Northern Co. in direct connection with their transcontinental service.



TWIN SCREW PASSENGER STEAMER "NORTH LAND."

AN IMPORTANT ADMIRALTY RULING.

On Thursday last Judge Swan reversed an important decision in admiralty made by himself, on a former hearing of the case.

On October 21, 1891, the steamer Conemaugh was sunk through collision in shoal water in the Detroit River near Sandwich Point. She was bound from Milwaukee to Erie with 1,800 tons of flour. She had reached a short distance above the point in question when she saw the steamer Burlington and a tow of four vessels rounding to, the steamer's intention being to land at the Smith coal dock for fuel. The towing steamer's turning left her schooners stringing out in the river in the form of a crescent, and the Conemaugh, which was close aboard, gave two whistle blasts to indicate that she would pass to the left of the last vessel in the tow.

Thus far all had gone well. But she had barely set her head to clear the last schooner of the tow than the lights of the New York, bound up, could be seen. They were about a mile apart when the Conemaugh gave two blasts to the New York indicating that she wished to pass to the left of that boat, but there came no answer. Still another and then another signal from the Conemaugh, with no response. The Conemaugh found herself in a position, where she had to take desperate measures to avoid collision with the tow of the Burlington, and with her engine at full speed and her wheel hard to starboard, she tried to cross the bows of the New York. The latter still stuck to her course, the collision occurred and the Conemaugh was run ashore to prevent her from sinking, but it was found that her starboard bow had been badly smashed in.

When the case came to trial, the Conemaugh claimed $70,000 loss to the hull and cargo and the Union line responded with a cross libel for $20,000 damages, the New York having been considerably damaged also. The best admiralty lawyers to be obtained were secured by both sides and the case was bitterly fought. It was clearly proven that the New York was negligent, Judge Swan saying in his decision, October 3, 1892: "The faults of the New York are so many and flagrant that it may be doubted if judicial records afford a parallel to the negligence and recklessness of her navigation."

But the court ordered a division of the damages for the reason, as he expresses it, that "the equities of this case are so strongly in favor of the Conemaugh that the conclusion that she was in fault has been reached with reluctance. The great disparity of fault has invited and received consideration. But the impossibility of enforcing the great commandment of the law of navigation which calls a halt when the risk of collision is involved compels me to adjudge both vessels at fault and order a division of damages."

Of the total of $90,000 damages, the Conemaugh was obliged to pay $40,000 and the New York the remainder.

The Conemaugh's attorneys obtained a rehearing of the case, and on Thursday last, the judge reversed his former decision, saying: "I am satisfied after a careful examination of the testimony in this case that in holding both vessels at fault, I passed too harsh a judgment on the conduct of the master of the Conemaugh in going ahead at full speed instead of reversing to avoid a collision. Some admissions made by the cross-libelant were not called to my attention on the first hearing. One of the most important of these was that the conduct of the Conemaugh was the only way left open to avoid a collision.

"As I found in the former opinion there would have been no collision had not the New York unlawfully changed her course upon being apprised of the proximity of the Conemaugh. This error, superadded to the many and flagrant prior errors of the New York's navigation, should be held solely at fault for the collision.

"This conclusion requires that the former decree in this cause be vacated, and that a decree be entered holding the New York solely at fault for the collision."

The case will probably be taken to the Court of Appeals. Harvey D. Goulder, of Cleveland, and Shaw & Wright, of Detroit, were proctors for the Conemaugh, and Schuyler & Kremer, of Chicago, and Henry C. Wisner, of Detroit, appeared for the New York.

THE MARINE RECORD

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CLEVELAND, O., MAY 23, 1895.

IN addition to the Beebe & McLellan life-boats, the U. S. life-saving service advertises for bids on twelve 34 foot, self-righting and self-bailing life-boats with center-boards, six of which are to be delivered at Grand Haven, Mich., and six at New York.

VESSELS in the vicinity of Ashtabula, Lake Erie, next week need not expect to hear the fog signal sounding in thick weather no matter how close they may stand in. It appears that this important aid is not in proper working order and four days will be required to effect repairs, or from Saturday until Tuesday, inclusive.

OUR thanks are due the Tacoma Chamber of Commerce for courteously extending to us the use of its rooms. The commercial prosperity of Tacoma had become an assured result years ago, and the Chamber of Commerce as at present constituted will do much to make Tacoma the most prominent port on Puget Sound. Already there are indications that she is reaching ahead of her sister cities, Port Townsend and Seattle.

LAKE interests will be pleased to learn that Commander Nicol Ludlow, U. S. N., recently stationed at Chicago, as light-house inspector, has received a promotion to captain through the retirement of Admiral Meade. Captain Ludlow gained the hearty good will of transportation companies while detailed for lake service and but few naval officers on lake stations grasped the situation between salt and fresh water as did the then Commander Ludlow. Col. Wm. Ludlow, Corps of Engineers U. S. Army, is the senior brother of Capt. Ludlow, U. S. N.

THE project of bridging the Detroit River at Windsor is again being taken up under the old guise of a winter bridge, only the draw to be kept open all summer, except when required by passing trains. It is fortunate for the transportation interests that Mr. Livingstone, president of the Lake Carriers' Association is right on the spot and conversant with all details of the question. He is also in close touch with Michigan legislators so that it is not likely that any measures looking towards the construction of a bridge across Detroit River can be granted by the legislature until all interests concerned are heard from and then the Secretary of War can veto any action derogatory to the free use of the waterway.

THE RECORD suggested last week the placing of some device shorewards from the fog horn at Buffalo so as to deaden or at least muffle the sound over the land and while Buffalo is well situated for experiments of this nature the system would hold good at other ports also. Commander Gridley, U. S. Navy, inspector of the Lake Erie light-house district, stationed at Buffalo, has been in consultation this week with Col. Jared A. Smith, Corps of Engineers U. S. Army, relative to adopting some measures for decreasing the sound of the fog-whistle inshore and making such recommendations to the Light-House Board as will meet with their approval. It has already been suggested that the opening of the fog-horn be reduced from ten to six inches, and that the blasts be sounded at intervals of fifty-seven seconds instead of every twenty-seven seconds as at present.

THE DRAINAGE CANAL.

Now that the commission composed of three prominent members of the U. S. Corps of Engineers are engaged in determining the effect on Lake Michigan levels through the opening of the Chicago drainage canal, it is in order to revert to an address delivered by Major Thomas H. Handbury, Corps of Engineers U. S. A. before the Illinois river improvement convention, at Peoria, Ill., as far back as Oct. 11, 1887.

In this address Major Handbury, says: "In treating of this question of drawing a large supply of water from Lake Michigan, there is one point of great importance that I do not find touched upon in any of the reports or discussions upon the subject; that is the effect that the withdrawal of so large a quantity of water from Lake Michigan, as is proposed by the Chicago drainage commission, is going to have upon the mean level of the lakes. The discharge of the upper lakes through the St. Clair River has been found to be about 217,000 cubic feet per second. The mean level of Lakes Huron and Michigan is 581 feet above the sea; that of Lake Superior about 20 feet higher. The lower lakes receive their supply from this upper lake, and the various streams that empty into them. The discharge is just equal to the supply as the lakes remain at their mean level 581 feet.

Now, suppose another outlet in the bottom or side, if you please, of this lower reservoir capable of taking off one-twentieth of the supply, which is the amount it is proposed to withdraw, what is going to happen in time to the mean level, to the depth of water in the various harbors and to the channel of the St. Clair River, which the government is spending so much money to improve?

This is a question upon which the people at the other outlet of the lakes may wish to have something to say.

It is, however, one of a purely engineering nature that can safely be left to a board of disinterested engineers to solve."

At a meeting of the Cleveland vessel owners association, held June 14, 1889, the attention of the members was called to the probable lowering of levels which would be occasioned through the opening of a large canal and the foregoing abstract of Major Handbury's address was printed in THE MARINE RECORD, June 20, 1889, yet, notwithstanding the early discussions on this subject, and almost each issue of Vol. XI of THE RECORD containing an article pointing out the probable result of such a waste of water, it has taken seven years for an adequate national commission to be appointed to show up the demerits of the project. The reason for this apparent laxity rested in the firm conviction the transportation interests felt at that time in believing no measures derogatory to lake commerce would be permitted by the federal government, but we have finally got over such a view at this date.

ERRORS IN SAILING DIRECTIONS.

We have from time to time given the hydrographic office, navy department, credit for desiring to advance the status of the lake sailing community by furnishing the latest and best sailing directions for the several districts, issuing azimuth tables, a pilot chart of the lakes which, by the way, is a delineation above criticisms, notices to mariners and similar publications. We have now, however, the unpleasant duty before us of seriously objecting to the long list of errors contained in publication No 108, part 2 being sailing directions for Lake Michigan, Green Bay and Straits of Mackinac. Between pages 52 and 71 no less than 65 corrections are required and while the major portion of these errors relate only to the length of piers, width of entrance to harbors, wrong dates, etc.; the publication is vitiated and rendered inaccurate to that extent, a feature, which in ordinary literature, would be pronounced grossly careless and slovenly but which issued by a government department can only be termed culpable negligence if not ignorance. Again in the next publication, being part 3, sailing directions for Lake Huron, Straits of Mackinac, St. Clair and Detroit Rivers and Lake St. Clair reason has been found to make no less than 29 corrections and many of these are of the most aggravating form. For instance on page 32, line 12 from bottom we are told that N W $\frac{5}{8}$W is equal to N 18° 16′ W, while it is actually N 52° W, however, it now appears that a $1\frac{5}{8}$ point bearing was meant and not $4\frac{5}{8}$ points. Again on page 23, line 17 from bottom, we are told for S E $\frac{1}{2}$S, S 39° 22′ W, we are to read S E $\frac{1}{2}$ S as S 39° 22′ E only a matter of 79° difference, a change from $3\frac{1}{2}$ points west to $3\frac{1}{2}$ points east and then comes in a list of bearings given from opposite points. An aggregate of ninety errors already discovered in two small books ought to be sufficient to cancel or condemn the entire issues. We look for and maintain that absolute correctness should rule in what may be termed official publications. In giving courses, bearings and distances, slovenly, slipshod inaccuracies can not be tolerated, more especially where experience, talent and leisure are at a discount. Before sending out any other literature of this description the hydrographic office should have detailed a competent junior officer with a knowledge of the compass diagram and then have someone read proof that was at least acquainted with the cardinal points of the compass.

COLLISION INQUIRY.

It would now appear as if the recent Cayuga-Hurd collision off Skillagalee, Lake Michigan, was caused by mistaken passing signals. The fact that it was brought about through negligence or ignorance lies in the result that about $300,000 worth of property including the hull and cargo of the fine new steel steamer Cayuga is sunk in water too deep and in a position too exposed for successful salvage services to be rendered. Besides this the J. L. Hurd has been condemned by the underwriters as a constructive total loss. It has been reported that no official inquiry will be made regarding this casualty, but such a statement is entirely at variance with the custom of the steamboat inspection service and it is safe to say that a due and diligent examination will be made into the causes leading up to the loss of one life and a large amount of property. Newspaper statements emanating from Buffalo quotes the master of the Cayuga as talking a good deal about the case, the new "rules of the road, etc. In this connection, it would no doubt be more prudent for those personally interested in the casualty to reserve their evidence until it was called for by the steamboat inspectors appointed to unravel the technical liability in the faulty handling of the steamers.

WE have received from the hydrograhic office, navy department, Washington, D. C. a sample copy of the newly issued "Pilot chart of the Great Lakes." The delineation now before us is superior to anything in the line of pilot charts that we have ever seen, for, besides being finely tinted in colors and showing the international boundary line running through each lake, it contains a mass of data of the greatest practicable benefit to lake navigators not the least useful of which is the tables of distances in statute miles between all lake ports, a list of lake dry docks and their dimensions, particulars of all lake canals, rules for the use of oil to protect vessels in stormy weather, correct variation curves and other valuable information.

THE New York *Herald* in a recent article takes exceptions to the present system whereby foreign built hulls are being granted American registry. The law expressly requires that to gain an American register the foreign vessel shall have been wrecked in American waters, be purchased and repaired by an American citizen who shall have expended on her an amount equal to three-fourths of the vessel's value before the register can be granted, otherwise, a special act of congress is necessary to nationalize the craft. It is claimed that in some instances an elastic interpretation has been placed upon the statute admitting foreign built vessels to American registry.

THERE is evidently a desire on the part of the railways to make freights through the Erie Canal unprofitable to shippers. The opening of the water communication to New York on May 3 gave railroads the opportunity to cut rates on wheat from $4\frac{1}{2}$ to $5\frac{1}{2}$ cents per bushel to as low as $2\frac{1}{4}$ cents for a through rate. This figure is lower than canal boatmen can work at if the elevator charges are added thereto. Last season was bad enough from a competitive standpoint but this year promises a canal traffic failure.

BOTTOM damage to large steel steamers continue to be the every day report and there are all indications in favor of the underwriters "paying dearly for their whistles" or premiums, during the season of 1895. In this respect the A 1 wooden tonnage escapes remarkably clear while the steel vessels pick up boulders wherever they can be found.

LAKE FREIGHTS.

The 80-cent rate on single charters from the head of the lakes is not yet established although vessel owners are holding out for that figure and the wild rate is strong at 75 cents. Marquette and Escanaba rates are unchanged at 65 and 45 cents respectively and firm from the latter port.

The anthracite coal rate to Lake Michigan advanced 5 cents during the week, the quotation now being 35 cents, but there is still some chartering being done at the old figures.

Next week will see the beginning of activity in soft coal shipments and tonnage is inclined to hold off for a fair living rate of freight.

The Chicago wheat rate is 1¼ cents to Buffalo, 1 cent oats to Port Huron and the same from Milwaukee to Buffalo, 2½ cents on corn to Kingston, 2 cents has been offered from Duluth with no takers.

Lumber shipments are brisk, $1.62½ per M feet Duluth to Tonawanda, Marquette to Cleveland $1.50, Menominee to Buffalo and Tonawanda $1.40.

Canal freights, Buffalo to New York 1⅞ wheat, 1⅛ oats and 1¾ cents on corn. Lumber, Buffalo or Tonawanda to New York $1.75. Up bound canal rates 90 cents on cement and $1 per ton general cargo.

NOTICE TO MARINERS.

Notice is hereby given that on May 24, 1895, the sounding of the fog-horn at Ashtabula Harbor, O., will be discontinued for four days for necessary repairs.

JARED A. SMITH,
Lieut. Engineer 10th L. H. District.
Corps of Engineers, U. S. A.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—MICHIGAN.

HAY LAKE CHANNEL, ST. MARY'S RIVER.

Notice is hereby given that on May, 8, 1895, the following named additional buoys were placed (temporarily) to mark Hay Lake Channel:

Opposite S. E. End of Dike.—A black 25-foot spar buoy, in 18 feet of water, on the southerly side of Middle Neebish Cut, approximately in a position to be occupied by a floating light.

Turn in Middle Neebish Cut.—A red 25-foot spar buoy, in 18 feet of water, in the angle of the turn from Middle Neebish Cut into the Lower Hay Lake Cut, and approximately in a position to be marked by a floating light.

Turn in Middle Neebish Cut.—A black 25-foot spar buoy, in 18 feet of water, at the turn from Middle Neebish Cut into the Lower Hay Lake Cut, and approximately in the position to be occupied by Middle Neebish Cut Range (front) Light.

Sunken Crib.—A red 25-foot spar buoy, in 20 feet of water, on the easterly side and about midway of the Lower Hay Lake Cut, near a sunken crib to be marked by a light.

Lower Entrance "Little Rapids."—A red 25-foot spar buoy, in 19 feet of water, on the easterly side of the lower entrance to the Lower Little Rapids Cut, in a position to be marked by a light.

North Entrance, W. Side.—A black third-class can buoy (to be changed to a second-class can), in 21 feet of water, on the W. side of the N. entrance to the Upper Little Rapids Cut.

North Entrance E. Side.—A red second-classs nun buoy will be placed, as soon as practicable, in 20 feet of water, on the E. side of the N. entrance to the Upper Little Rapids Cut.

In running down the St. Mary's River it will be necessary in turning into Hay Lay Channel for vessels to pass quite close to the black can buoy in order to avoid being swept by the strong current on to the dangerous shoal on the E. side of the new channel. In making the turn at the lower or S. end of Hay Lake into the Middle Neebish Cut, vessels should avoid getting too close to the red buoys, as the current will tend to carry them on to the shoal.

By Order of Light-House Board:

JOHN G. WALKER,
Rear-admiral, U. S. Navy, Chairman

OFFICE OF THE LIGHT-HOUSE BOARD, Washington, D. C., May 21, 1895.

OBITUARY.

CAPTAIN WILLIAM MAXFIELD.

Capt. William Maxfield, one of the oldest of the lake navigators, died at his home in Vermillion last Monday, after a brief illness. Among the boats that Capt. Maxfield sailed are such old timers as the schooners F. T. Barney and R. J. Gibbs. He was 82 years old and leaves four sons and three daughters.

ELIGIBLE FOR LICENSES.

Atty-Gen. Olney has decided that persons who have resided in the United States six months can secure licenses as marine engineers on lake and ocean vessels. This decision ends a controversy which was started by the Marine Engineer's Beneficial Association when the Inman Liners the City of Paris and City of New York were admitted to American registry. The association held that only American citizens should be employed as engineers, but Secretary Foster at that time seemed to consider that marine engineers were not licensed officers in the sense that the statute dictated it is but fair to state, however, that engineers undergo a voluntary examination after making affidavit to their nationality as being American nor would they be eligible as candidates for licenses unless they produced proof to substantiate the affidavit. The U. S. steamboat inspection service ought to be heard from in this connection.

A COAST TOW.

The large iron sailing ship Liverpool, after discharging in New York a cargo of jute from Calcutta, found that the only charter in the market was for a cargo of deals from St. John, N. B. back to Calcutta. Rather than risk a lengthy coast voyage, the master of the Liverpool entered into a contract to tow his ship around to St. John, a distance of 800 miles, at a cost for towing of $1,000.

THE NORTH SEA-BALTIC CANAL.

On June 21 the international naval celebration announcing the opening to commerce of the North Sea-Baltic Canal will be carried out with all due distinction. Fifty-four foreign war ships manned by 18,000 seamen and 28 German warships with a crew of 364 officers and 10,000 men will participate, besides a large fleet of merchant tonnage.

The foundation stone for this canal was laid near Kiel by Emperor William 1, on June 3, 1887, and the total cost of the canal, 61 miles in length, is in round figures forty million dollars, twelve and a half millions of which Prussia readily agreed to disburse, the remainder being paid out of the imperial exchequer.

As regards the commercial aspect of the new canal, the magnitude of the traffic between the North Sea and the Baltic is much larger than is generally supposed, while it is certainly steadily increasing. This traffic represents an annual registered tonnage of 12,240,000 for the years 1871 to 1880, and of 16,515,504 registered tons for the years 1887 and 1889, the total for the present year being estimated at 18,521,212. With the use of the new canal, width enough is given for the safe passage of two of the largest naval vessels on a draft of 29 feet. The former Eider canal recorded about 4,000 vessel passages a year, but the route was tortuous and only accommodated a ten-foot draught, so that commerce was limited to local tonnage.

FLOTSAM, JETSAM AND LAGAN.

The crib lights at the head of Hay Lake cut., where so many boats have found trouble lately, will be ready for use in the latter part of July.

The new side-wheeler City of Toronto built for the North Shore Navigation Co., has gone into the trade on the Georgian Bay route, Capt. Cameron in charge.

The item which has gone the rounds of the press stating that F. W. Wheeler & Co., W. Bay City had taken a contract to build a fleet of twenty boats for the lake and Erie Canal trade is premature. It is correct that figuring on such a contract has been going but no definite conclusion has yet been reached.

A new manufacture known as the William Wilford's matchless waterproof canvas has been placed on the market by Hoey, Gascoigne & Co., 56 Wall St., New York. The material is of flax instead of the usual cotton duck and its durability is pronounced superior to any canvas in former use. It is also pliable and watertight.

The steamship Campana has been sold by Smith & Keighly, of Toronto, to the Gulf Ports Steamship Co., and will be taken down the St. Lawrence River. The steamer will be cut in two at the government dry dock at Kingston, to permit passage through the St. Lawrence River Canals. When in the Gulf the steamer will take the place of the steamer Miramichi on the route between Pictou and Montreal.

The suit of the "Soo" railroad against the American Steel Barge Co., to recover a sum in the neighborhood of $100,000, is reported to have been settled, the defendant paying $5,500. The railroad claimed the whalebacks Pillsbury and Washburn lacked the capacity agreed upon. The Barge company claimed that changes had been ordered in the specifications.

Six gas buoys have been secured for the lakes out of the money appropriated for buoyage by the sundry civil service bill. Of these one will be placed on Lansing shoal, one off Gravelly Island, one in Poverty Passage and one probably at the turn in Erie Harbor. The other two are withheld for the present to see whether they will be needed to replace regular ones when they are taken up to be charged.

A 12,000-mile ocean tow is rather a long one, yet the Liverpool tug Blazer was engaged recently to tow the Italian steamer Colombo from Rio de Janeiro, Brazil, to Genoa, Italy. Roughly estimated, the distance is 6,000 miles to Rio and the same back to Genoa, with an additional 2,000 miles from the latter port back to Liverpool. These long tows are usually made with patent flexible steel wire tow ropes.

The General Electric Co., Schenectady, N. Y. have sold to Lynn Bros. marine reporters at Port Huron a very powerful search light to be placed in front of their office. The Lynns have received the contract from the Lake Marine News Assn. to report all steamers passing Port Huron and the use of the search light will be a great aid to these reporters in learning the names of boats during stormy nights.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

Ashland's ore shipments for last week were 90,488 tons; for season up to Sunday, 188,607 tons.

Grain shipments from the port of Superior this season already aggregate nearly 2,400,000 bushels.

The Edna Brydges, the Swallow and the Monarch will ply between Rat Portage and St. Francis this season.

Sales of lumber for lake shipment during the past week are estimated to aggregate 10,000,000 feet. Prices are holding stiff.

The American Steel Barge Co. has been supplied with new fifty-ton sheer legs. They will be of great assistance at the whaleback yard.

The Otego, which was bought by Capt. Joe Doville, of Cleveland, is in dry dock, getting an extensive overhauling and repairing before going down the lake.

The Ohio Coal Co. has leased the Ashland Lime, Salt & Cement Co.'s docks at Ashland, aud are putting in unloading machinery. It is understood that the Superior Coal Co. will take the dock vacated by the Ohio Co.

The new hoisting machinery at the Lehigh Valley coal dock was placed in operation this week. The three machines will be placed at work in full before long. Each of the three buckets has a capacity of two tons per minute.

The St. Paul & Western Coal Co. has just completed the work of roofing in an additional space of 125x200 feet at its dock. As it now stands, the dock has an enclosed space of 125x825 feet. The dock is 1,500 1eet long and 360 feet deep, of which another portion will be enclosed before a great while.

Ryter & Conley, of Pittsburg, have been awarded the contract for building the immense tanks for the Standard Oil Co. They must be completed within 60 days It is probable that a contract for a third tank will then be awarded. The first of the two barges, which was launched last week, has a capacity of 508,500 gallons. The other will probably be launched next week.

Major Sears, U. S. A. Engineer Corps, has gone to Brule River to resume work on the proposed canal connecting the Mississippi with Lake Superior. One survey has been completed, and now another will be made. The Major has 15 picked men. He will stay a few days and will then leave the work to an assistant. It is expected that the survey will be finished within a month. The appropriation of $10,000 is also about half exhausted.

A merry war is on just now between the mill managers and the different lake lines. The rates on flour between the head of the lakes and Cleveland is 12½ cents, but in former seasons the rate has been cut to 10 cents. This year the lake lines will not come down in their rate, and as a result the wild boats, many of which will carry freight at a lower rate, are securing much of the patronage of the mills. Sometimes the wild boats go from mill to mill and pick up what flour they can.

AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset by reversing the bearings given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's rising and setting:

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 25	E. 29° N.	NE. by E. ½ E.
May 31	E. 30° N.	NE. by E. ⅜ E.

LAKE ONTARIO, S. END HURON AND CENTER LAKE MICHIGAN, LAT. 44° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 25	E. 30° N.	NE. by E. ⅜ E.
May 31	E. 31° N.	N E. by E. ¼ E.

W. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 25	E. 31° N.	NE. by E. ¼ E.
May 31	E. 33° N.	NE. by E. ⅛ E.

LAKE SUPERIOR, LAT. 48° N.

Sunrise.	Bearing (degrees).	Bearing (points).
May 25	E. 32° N.	NE. by E. ⅛ E.
May 31	E. 34° N.	NE. by E.

With a compass correct magnetic, the difference between the observed bearing will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the result after the variation is applied will be the amount of deviation on that course.

PAPER SAILS.

An innovation in yachting circles is now being talked of, nothing less than sails made of compressed paper, the sheets being cemented and riveted together in such way as to form a smooth and strong seam. It appears that the first process of manufacturing consists in preparing the pulp in the regular way, to a ton of which is added one pound of bichromate of potash, 25 pounds of glue, 32 pounds of alum, 1½ pounds of soluble glass and 40 pounds of prime tallow, these ingredients being thoroughly mixed with the pulp. Next, the pulp is made into sheets by regular paper making machinery, and two sheets are pressed together with a glutinous compound between, so as to retain the pieces firmly, making the whole practically homogenious.

The next operation is quite important and requires a specially built machine of great power, which is used in compressing the paper from a thick, sticky sheet to a very thin, tough one. The now solid sheet is run through a bath of sulphuric acid to which 10 per cent. of distilled water has been added, from which it emerges to pass between glass rollers, then through a bath of ammonia, then clear water and finally through felt rollers, after which it is dried and polished between heated metal cylinders. The paper resulting from this process is in sheats of ordinary width and thickness of cotton duck, it is elastic, air-tight, durable, light, and possessed of other needed qualifications to make it available for light sail making.

The mode of putting the sheets together is by having a split on the edges of the sheet or cloth so as to admit the edge of the other sheet. When the split is closed, cemented and riveted or sewed it closes completely and firmly, and makes a neater seam than a sewed one.

A COAST LINE WATERWAY.

The torpedo boat Cushing is now on her way from Washington to Key West, under instructions to make the trip as much as possible through inland waters. The French have made experiments, it is said, in transporting small boats by coast railways; but our torpedo boats are all, with the exception of the Stiletto, of the heavier classes. It is a source of strength to possess this interior coast line of waterways, natural or artificial, extending through hundreds of miles.

Looking at the route from Narrangansett Bay to Fernandina, first, there is Long Island Sound, with its approach to New York harbor; then Raritan Bay, the Raritan River, and canal already shown to be practicable for torpedo boats to the Delaware; then down the Delaware and through the Chesapeake and Delaware Canal to Chesapeake Bay; then down that bay to Norfolk, and by canal again to the well known series of sounds on the North Carolina coast. From the mouth of the Neuse to Cape Fear, perhaps there would need to be some deepening of existing waterways required. Then comes the open sea, for a short distance only, and then more sounds, bays, and channels, along South Carolina, Georgia and Florida. In the Gulf there are plenty of bayous and lagoons along the coasts of Louisiana and Texas.

When the U. S. torpedo fleet becomes strong enough for the definite assignment of it to sections, it will be time to see what facilities can be afforded, at slight expense, for more quickly establishing inland communication between the ports of each district. For the most important one, including the Narragansett Bay and Long Island ports, New York and its subsidiary cities, Philadelphia, Baltimore, Washington, Norfolk and Hampton Roads, the work is already done.

NAVAL PROMOTIONS.

The promotions in the navy following Admiral Mead's retirement are as follows:

Commodore Lester A. Beardslee, commanding the Pacific squadron, to be rear admiral; John A. Howell to be commodore; Commander Nicol Ludlow to be captain, Chapman C. Tod to be commander; Gottfried Blocklinger to be lieutenant commander; Leroy M. Garrett, to be lieutenant and Ensign Wilfred B. Hoggatt to be lieutenant, junior grade.

WASTE OF WATER.

BUFFALO, May 21, 1895.

To the Editor of The Marine Record:

The action of the Federal government ought to be to stop the outflow of the lakes instead of doing such a vast amount of dredging, for if we continue deepening we may soon be on a level with the sea. My opinion is that we ought not only to place a dam at Niagara but also at the mouth of Detroit River and the "Soo." Let the experts get to work and see where a decade hence will land us if you open up the Hennepin Canal, use water power for manufacturing and keep on with the natural increase of population. The only alternative that I can see will be to have lock gates at several points and practically make canals of the low water channels. The deeper you dredge the lower the levels will be.

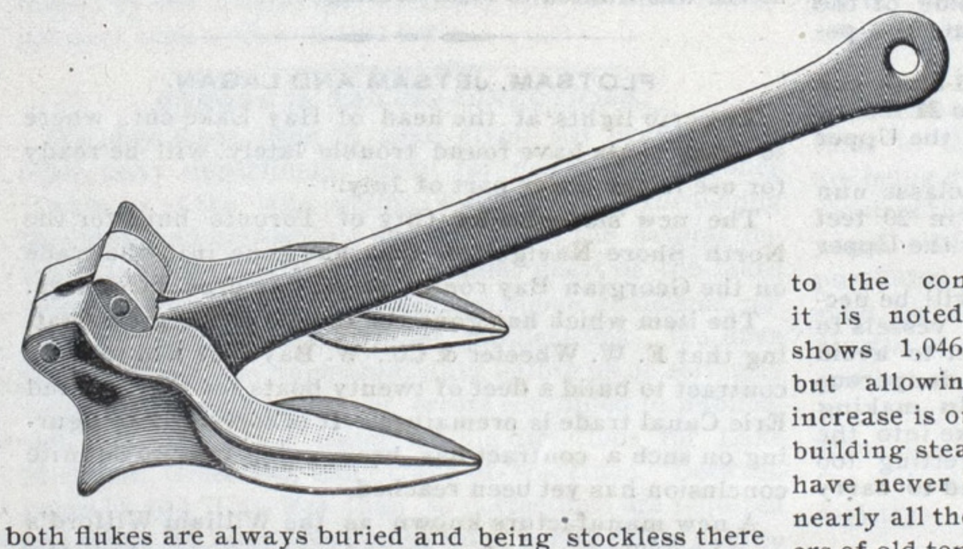
M. B. S.

BABBIT'S IMPROVED ANCHOR.

(ILLUSTRATED.)

In these days of patents and improved changes on ground tackle the Babbitt anchor should come in for a share of notice due to the generally enhanced holding power of later inventions.

The Babbitt anchor is adapted to the row-boat as well as the largest tonnage afloat, it can never foul as



both flukes are always buried and being stockless there is nothing for the cable to sweep foul of. Another point which the Babbit seems to have the advantage in is the fact that the crown is so constructed that if the anchor falls on the side the slightest strain on the cable brings both flukes into a holding position.

The Babbitt is a guaranteed anchor and from the manufacturer's standpoint will never fail to do all that is claimed for it. The American Ship Windlass Co. vouches for its adaptibility and are now making the anchor under patent rights which is a sufficient endorsement of its good work. All reference to the Babbitt patent anchor will be fully explained by addressing the makers at Providence, R. I.

AN OLD CHARTER.

Capt. John Prindiville of Chicago finds the following old document in his possession, which, although it only dates twenty years ago reads rather ancient. "Shipped by the Grace of God in good order and well conditioned by Messrs. Steel & Craig of Glasgow.

In and upon the good ship or vessel called the Pamlico, whereof is master for this present voyage, (Hayden) and now lying in the harbor of Troon bound to Bayou Teche, to say, 495 tons best large screened Troon coal, being marked and numbered as per margin and are to be delivered in the like good order and well conditioned at the aforesaid port of Bayou Teche. (The act of God, the Queen's Enemies, Fire, and all and every other dangers of the seas, rivers and navigation of whatsoever nature and kind soever excepted) unto John B. Lyon, Esq., or to his assigns he, or they paying freight for the said goods—with primage and average accustomed. In witness whereof the master or purser of the said ship or vessel hath affirmed to three bills of lading all of this tenor and date, the one of which being accomplished, the others to stand void, and so God send the good ship to her desired port in safety. Amen. Dated in Troon Dec. 11, 1876. H. M. HAYDEN."

With the bill of lading is attached receipts from Steel & Craig, Glasgow, to John B. Lyon, Chicago owner of the brigantine Pamlico for £205 16s 2 being the price of the cargo and insurance thereon.

NOTES.

S. I. KIMBALL, chief of the U. S. life saving service, advertises for bids on fifteen Beebe-McLellan life-boats, to be delivered in New York. Full particulars regarding forms of proposals, etc., can be obtained by addressing the department at Washington.—*Shipowning.*

As an indication of the volume of the northwest lumber trade, it may be quoted that Alger Smith & Co., of Detroit have recently invested $65,000 in standing timber in Minnesota. Another deal of the same firm aggregated $55,000 and steps are being taken to close a further purchase of $16,500 worth of timber yielding acreage. This makes a total outlay of $136,500 for timber lands.

EDWARD S. CLARK & CO., designers and builders of steam yachts and launches, water tube boilers and triple expansion engines have removed their entire plant from Freeport St., to Harrison Square, Boston, Mass., where they will work principally for the marine trade and attend to all stationary orders. This well known and established firm and well worthy of a call marine interests.

THE new composite built light-ship for coast service will be fitted with the Watkins & Davis type of boilers 14 feet long, 8 feet wide and 8 feet 6 inches high from under side of furnace leg to the top of shell, 8 feet in diameter, the Keasbey & Mattison "Magnesia" covering being named in the specifications for boilers and pipe covering. The electric light plant will consist of two of the General Electric Co.'s marine sets known as M. P. 4-8-550. She is also to be equipped with 5 by 4-inch double cylinder Sturtevant blowing engine.

IN the semi-annual circular issued by H. E. Moss & Co., of Liverpool, relative to the conditions existing in steamship circles, it is noted the shipbuilding statistics for 1894 shows 1,046,508 tons added to the merchant fleet, but allowing for losses during the year, the net increase is only 432,000 tons for the year. Prices for building steamers remain abnormally low, in fact they have never been lower; some yards are closed and nearly all the builders are most anxious for work. Owners of old tonnage are at last realizing the uselessness of holding on to their property, and consequently about 100,000 tons out of at least 500,000 tons available, have already been broken up. It is absolutely impossible for such tonnage to be worked at a profit, or to compete any longer with modern light-draught triple steamers carrying, in many instances, double the dead-weight on the same draught of water. How truly the foregoing conditions fit into the present lake practice we can leave our readers to judge, yet, we can say, that if the extract had been written in connection with lake steamers, instead of the Liverpool coast and ocean trade the statement could not have been more pertinent in its application.

THE schooner Vega is one of the oldest vessels afloat on the lakes, having been built at Erie, Pa., in '56. She was formerly known as the St. Paul and A. J. Covill Prior to her coming out this season, she was thoroughly rebuilt at Milwaukee, where she is owned.

WILLIAM L. BROWN, President.

WALTER F. COBB, Vice President and Treasurer.

W. I. BABCOCK, Manager.
O. R. SINCLAIR, Secretary and Asst. Treas.

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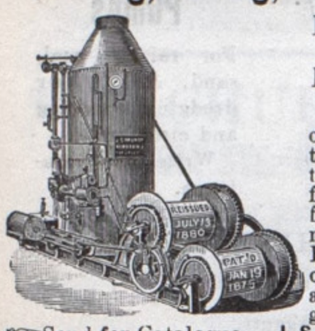

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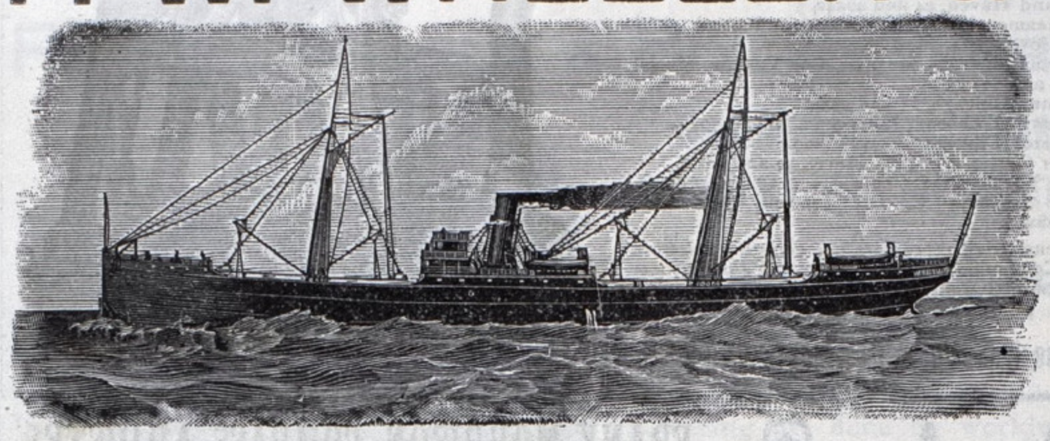

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MARINE ENGINES,

DETROIT, MICH.

INCORPORATED 1794.

Insurance Company of North America.

CAPITAL, Paid up in Cash, - - $3,000,000.00
ASSETS, - - - - - - 9,562,599.92

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Insures against Marine and Inland Transportation Risks and issue Policies making Loss Payable in England.

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The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

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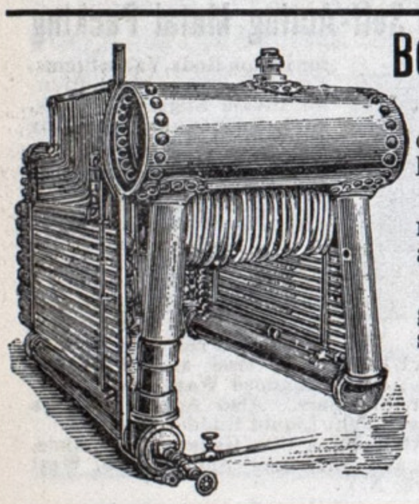

These rapid Steaming Boilers require less room, occupy less space in width, height and length; weigh less than any other.

Have short, perfect circulation, no dead ends, no joints in the fire, and any engineer can get at all parts of it.

The Steam Yacht "Rex," having 25 square feet grate surface and 1000 square feet heating surface, steamed 144 miles on 1000 lbs. of coal.

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Marine Valve, Renown Engine, Eldorado Engine, Crank Case, Victor Signal, Dark Lubricating, Mineral Seal, Head Light, Arctic Cup Greases, and Lard Oils,

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By the Spring Schedule effective May 19th on the Nickel Plate Road, an effort has been made to give a better and more convenient service to our patrons. The schedule time of through trains has been shortened and local points have been affected advantageously.

WEST BOUND.

Fast Express No. 5, which left New York at 6 p. m. and Boston at 3 p. m. the day previous, leaves Buffalo at 6:35 a. m. and arrives at Chicago at 9 p. m., passing Erie and Cleveland during the forenoon, Bellevue at noon and Ft. Wayne at 4 o'clock. Western Express No. 1, with through sleeping cars, which left New York and Boston the evening previous, leaves Buffalo shortly after noon daily, and arrives in Cleveland at 7 p. m., taking passengers into Chicago at 7:25 a. m.

The Chicago Mail, which departs from Cleveland week days at 6:00 a. m., makes local stops to Chicago, where it arrives at 7:00 p. m., in convenient time for evening entertainments.

EAST BOUND.

No. 6 leaves Chicago 1:30 p. m. daily, arriving at Fort Wayne 6:20 p. m., Cleveland 11:36 p. m., Buffalo 6:00 a. m., New York 6:30 p. m., Boston 9:00 p. m. next day.

No. 2 leaves Chicago 9:20 p. m. daily, arriving at Cleveland 9:53, Buffalo 4:55 p. m., New York 7,50 a. m., Boston 10:20 next morning. Cleveland Mail leaves Chicago 8:05 a. m. (daily except Sunday), reaches Knox at 11:00 a. m., Ft. Wayne 1:50 p. m., making intermediate stops, arriving at Cleveland 9:00 p. m.

253-22

ESTABLISHED 1871. INCORPORATED 1893.

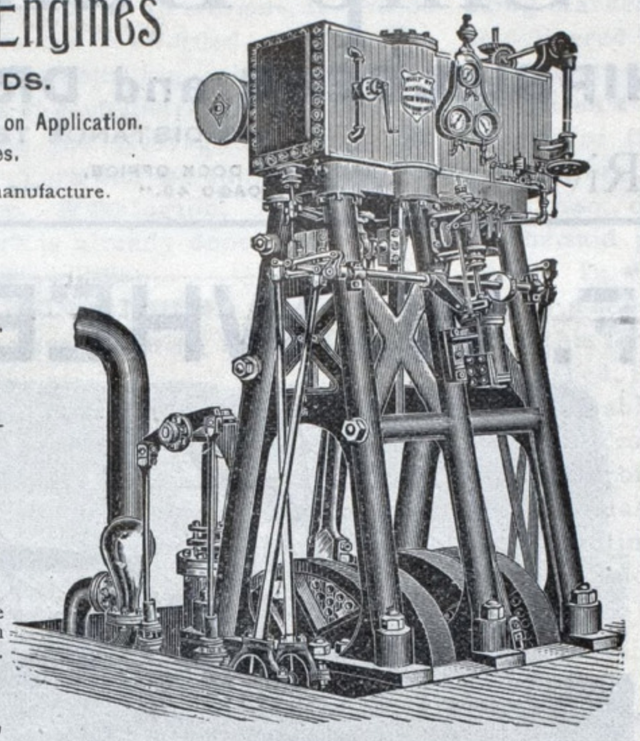
MONTAGUE IRON WORKS CO.,

MANUFACTURERS OF

Marine and Stationary Engines

AND BOILERS OF ALL KINDS.

MONTAGUE, MICH.



Heavy Castings a Specialty. Prices Quoted on Application.

Fore and Aft Compound Marine Engines.

The Engines in the ollowing boats are of our manufacture.

Edward Buckley, Manistee, 18 and 36x30.
Sachem, Grand Haven, 21 and 38x36.
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Isabella J. Boyce, Michigan City, 19 and 32x26.
M. T. Greene, Chicago, 20 and 36x36.
Passenger and Freight Steamer, Mabel Bradshaw, Muskegon, 16 and 28x26.
Ionia, Grand Haven, 24 and 46x42.
Survey Steamer, W. S. Hancock, 12 and 21x20.
Mark B. Covell, Manistee, 18 and 30x26.
Passenger and Frieght Steamer, Bon Voyage, Saugatuck, 16 and 30x26.
Tug, Hunter, Chicago, 15 and 28x22.
Tug, Edward G. Crosby, Muskegon, 16 and 30x24.
Oval Agitator, Chicago, 14 and 28x20.
Tug, Peter Coates, Sault Ste Marie, 10 and 20x16.
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Passenger Steamer, E. G. Maxwell, Pentwate 14 and 28x20.

The engraving represents our 20 and 36x36 Fore and Aft Compound Marine Engine. We build them all sizes and guarantee them to give satisfaction.

Prices furnished on application.

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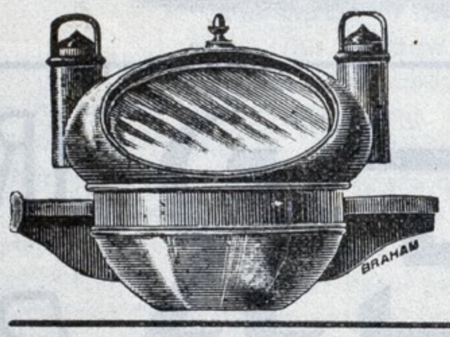

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All Nautical Instruments Carefully Repaired.

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TUG SWAIN STATIONED AT MACKINAW CITY.
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ALL WITH WRECKING OUTFITS ABOARD.

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Tugs, Lighters, Steam Pumps, Hawsers, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH—Engine Compound, Cylinder 16 & 30 in. diameter, 30 in. Stroke, Steam Pressure allowed, 125 lbs.

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TUG OWEN—Cylinder 20 by 20, Steam Pressure allowed, 104 lbs.

CENTRIFUGAL PUMPS. SEVEN AND FOURTEEN INCH SUCTION.

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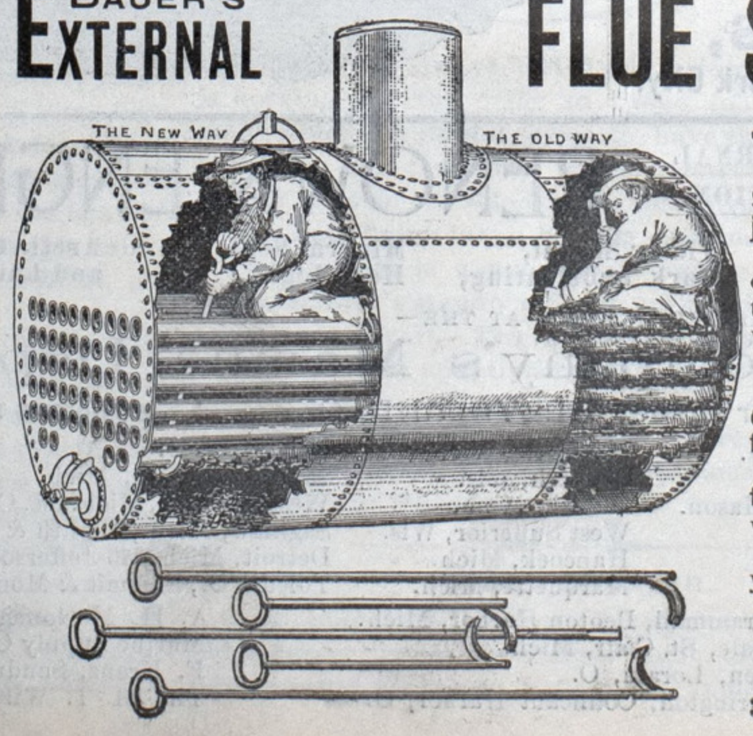

THE only device that will effectually **remove Scale** and **Sediment** from Flues **without injury** to flues or boiler.

Made of tool steel, hardened, concaved and ground, producing two sharp edges, and can be worked either way.

A Set will last about 10 years. Used in **more than 90 different cities** and give **universal satisfaction.**

A **Shell Scraper** and a **patented inside flue cleaner** given with each set.

Send **outside diameter** of your flues for a trial set.

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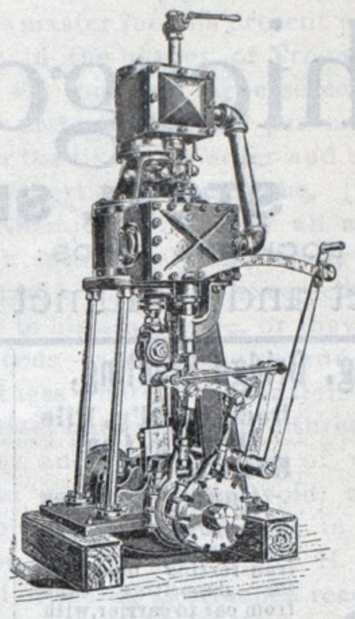

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5 TO 200 HORSE-POWER. These engines are high-class in workmanship and material and moderate in price.

Send for cuts, description and prices.

Centrifugal Pumps

For raising coal, sand, &c. For dredging, wrecking and circulating.

Write for catalogue.

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Mfrs. Yacht, Boat and Canoe Hardware.
Special Work a Specialty.
Boat Rails, Stanchions, Etc.

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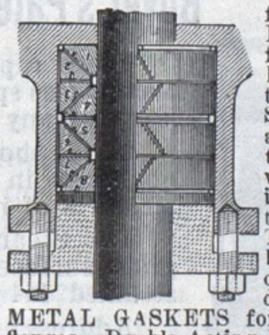
Commencing Sunday May 19th, the day coaches on all through trains of the Nickel Plate Road will be attended by a colored porter whose services are placed at the disposal of the patrons of the line. The purpose of this equipment is to insure scrupulously clean cars enroute. 254-26

Katzenstein Self-Acting Metal Packing



for Piston Rods, Valve Stems, Etc., of every description, for Steam Engines, Pumps, Etc. Adopted and in use by the principal Iron Works, Steamship Companies, Mills and Engine Builders, Electric Light and Power Plants within the last twelve years in this and foreign Countries. Also FLEXIBLE TUBULAR METALLIC PACKING for Slip-Joints on Steam Pipes and for Hydraulic Pressure. Also METAL GASKETS for all sizes and shapes of flanges. Double-Acting Balanced Water-tight Bulkhead Doors for Steamers. Also Agents for the McColl-Cumming Patent Liquid Rudder Brake.

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Automatic Piston or Mocking Bird Whistles. Special Whistles made to order. Penna. Steam Flue Cleaner. Water Gages, Penna. Gage Cocks, Air Cocks, Oil Cups, Brass and Bronze Castings a Specialty.

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West, Northwest and Southwest. Agents of the Nickel Plate Road are authorized to sell Homeseekers' Excursion tickets May 21st and June 11th. An unexcelled dining car service and palatial sleepers on through trains between Chicago, Buffalo, New York and Boston. 246

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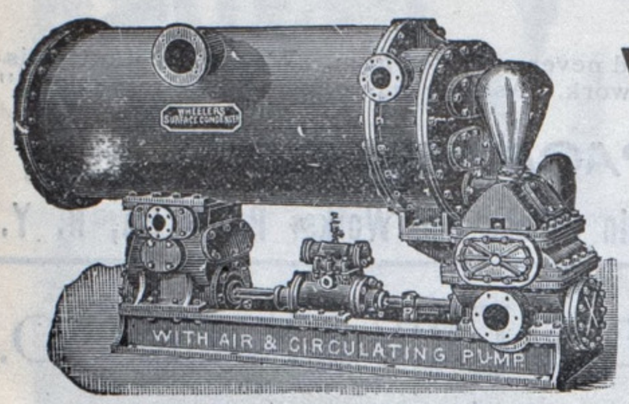
39 & 41 CORTLANDT STREET, NEW YORK.



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Mounted on Combined Air and Circulating Pumps.

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Mounted upon Combined Air and Circulating Pumps.

Sole Proprietors and Manufacturers of the
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VOLZ PATENT COMBINED SURFACE CONDENSER AND FEED-WATER HEATER.
WHEELER FEED-WATER HEATER, AIR AND CIRCULATING PUMPS.
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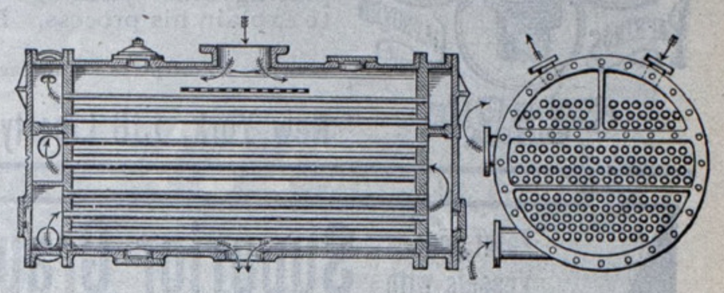

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Wrought Iron Pipe & Fittings, Engineer's Supplies

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Homeseekers' Excursions

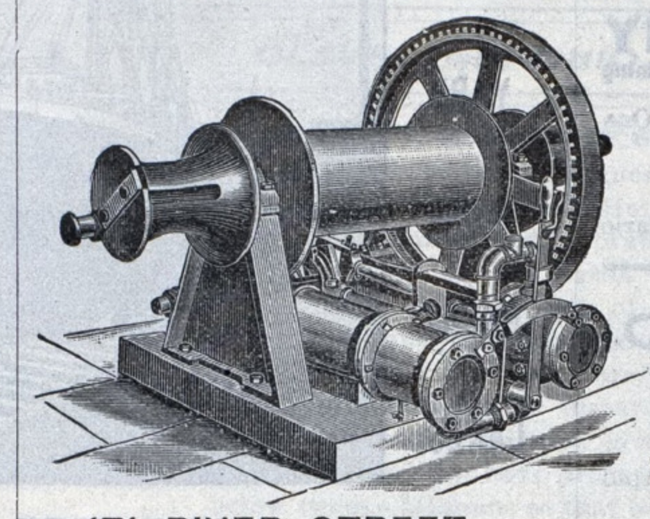
To the West, Northwest and Southwest, May 21st and June 11th, at low rates. Ask agents of the Nickel Plate Road. Remember we offer a perfect passenger service with through sleeping cars between Chicago, Buffalo, New York and Boston. 245

PROPOSALS.

U. S. ENGINEER OFFICE, 349 Carondelet St., New Orleans, La., May 6, 1895. Sealed proposals for coffer-dam, excavation and piling foundation for lock at Plaquemine, La., will be received here until 12 o'clock noon, June 6, 1895, and then publicly opened. Information furnished on application. JAMES B. QUINN, Major, Engineers. 19-22

T. R. TEARE. M. THOMAS.

RIVER MACHINE & BOILER WORKS



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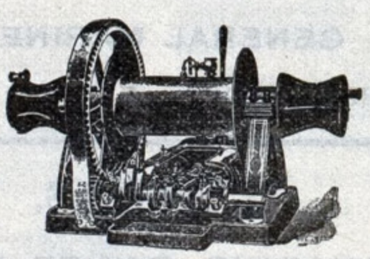
Telephone 994. 111 Elm Street, CLEVELAND, O.



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BUILDER OF DUPLEX HOISTING AND DECK ENGINES.

Plain Finished and Automatic **ENGINES,** From Heavy Patterns at Moderate Prices.

Vertical, Horizontal, Marine and Locomotive **BOILERS** Strictly First-Class and Highest Test.

SEND FOR CIRCULAR AND PRICES. SAGINAW, MICH.

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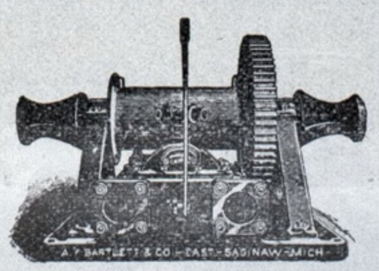
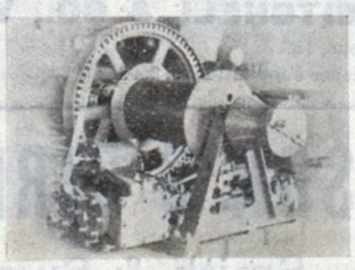
In use on the ollowing vessels: Steamers—Roumania, Bulgaria, Germanic, Brittanic, George G. Hadley, S. S. Wilhelm, Majestic, Alex. Nimick, John Harper, Walter Vail, Panther, City of Berlin, City of Paris, City of Glasgow, City of London. Schooners—Tokio, Asiatic, Baltic, Celtic, Aberdeen, William D. Becker. Stopping, Starting, Reversing and Lowering, all done by working one lever.



A. F. BARTLETT & CO., - East Saginaw, Mich.

DECK AND DOCK HOISTS



Our Hoists will be found on the following boats: Tugs—Sumner, Sweepstakes, Winslow, J. K. Emmett, Acme, Mockingbird, Waldo Avery, Reliance, John Owen, Charlton, Howard, Duncan City, Chamberlain, Balize, Sampson, Westover, Gladiator, W. B. Castile, Home Rule, Robert Weideman, Boscobel and Peter Smith; Propellers—J. J. McWilliams, I. W. Stephenson, John W. Pauly; Barges—Jenness, Noquebay, Manta ee. Also in use by F. W. Wheeler & Co., W. B. City, Mich., Blood and Hart, Marine City, Mich., Michigan Salt Works, Marine City, Doty Bros., Pile Drivers, Toronto, Canada.

MARINE IRON CO., - - Bay City, Mich.

PROPOSALS.

U. S. ENGINEER OFFICE, 34 West Congress St., Detroit, Mich., May 8, 1895. Sealed proposals for furnishing all labor, materials and appliances, and removing material from Movable Dam and from 800-ft. Lock Approaches, also for constructing piers for Lock Approaches, will be received here until 2 p. m., June 7, 1895, and then pubiicly opened. All information furnished on application. O. M. POE, Col., Engineers. 19-22

TREASURY DEPARTMENT, U. S. LIFE-SAVING SERVICE, Washington, D. C., May 16, 1895. Sealed proposals will be received at this office until two o'clock p. m., of Tuesday, June 4, 1895, for the construction of twelve 34-foot self-righting and self-bailing lifeboats, with centerboard, six to be delivered in New York City and six in Grand Haven, Michigan. Proposals for either or both lots of boats will be considered. Plans and specifications, together with forms of proposal and full information, can be obtained upon application to this office; to the Inspector of Life-Saving Stations, 24 State Street, New York City; Assistant Inspector 1st and 2d Life-Saving Districts, Room 148, Postoffice Building, Boston, Mass.; Assistant Inspector 9th and 10th Life-Saving Districts, Custom House, Detroit, Michigan; or to the Collector of Customs at Cleveland, Ohio, Philadelphia, Pa., or Baltimore, Md. S. I. KIMBALL, General Superintendent. 21

TREASURY DEPARTMENT, OFFICE OF GENERAL SUPERINTENDENT U. S. LIFE-SAVING SERVICE, Washington, D. C., May 4, 1895. Sealed proposals will be received at this office until 2 o'clock p. m. of Friday, the 31st day of May, 1895, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1896; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture; Hardware; Lamps; Lanterns, etc.; Lumber; Medicines, etc.; Paints, Oils, etc.; Shipchandlery; Stoves, etc.; Tools, and Miscellaneous articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 24 State street, New York City; Superintendent Eleventh Life-Saving District, Grand Haven, Mich.; and Superintendent Twelfth Life-Saving District, Appraisers New Building, San Francisco, Cal. Envelopes containing proposals to be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C.," and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. S. I. KIMBALL, General Superintendent. 19-21

Colored porters have been placed in charge of day coaches on through trains of the Nickel Plate Road to insure perfectly clean coaches enroute. 255 26

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FOR STEAM, WATER AND AMMONIA.

Not having been subjected to the injurious chemical action of boiling oil, outlast all others, and never melt and gum. We are constantly displacing other packings on Lake and Ocean Steamers, and can guarantee our goods for marine work. Ask the man offering "the same thing" to explain his process. He boils his goods in oil.

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DEALERS IN COAL.

Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock.

All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick, and One Hundred Two and One-Half Ton Buckets.

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Dock Office, 127 West River St., Cleveland, Ohio. Telephone No. 8.

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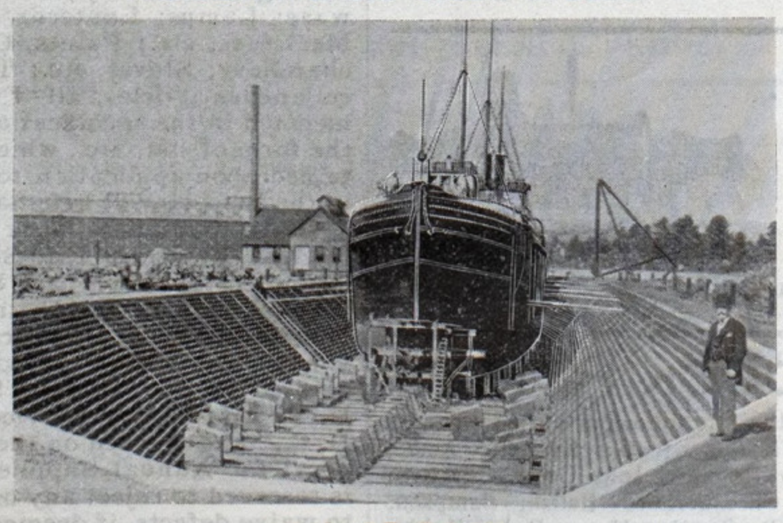

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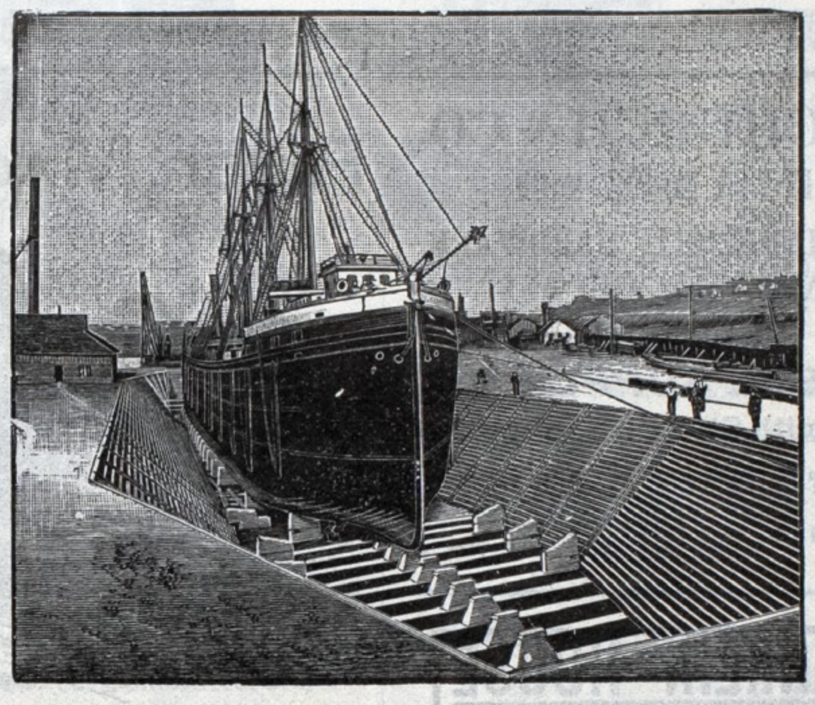

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